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CAN ARITHMETIC COME ALIVE?

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[Why should we assume that verbal or written problems must follow the traditional form?—Investigations to date show that only unsatisfactory results follow the use of the isolated written problem. Here is a proposal for an entirely new line of attack.]

STEPPING into the classroom of a sixth grade one morning, during the arithmetic period, I found the group busily engaged in getting more or less impossible answers to quite improbable problems, taken from a text that is neither better nor worse than most arithmetic text books.

Being interested to find out if arithmetic had any meaning to these pupils other than the juggling of figures to get the right answer, I asked if they would find the cost of a list of staple groceries for me, since they all assured me that they "did errands" for their mothers. They eagerly listed coffee at 75 cents and butter at 80 cents a pound, and other commodities at equally ridiculous prices, then proceeded to get a correct answer to an impossible problem. When I suggested that they would be very poor buyers if they made such purchases for their mothers, they were amazed because "the answer was right." What more could one ask of arithmetic? Finally, it dawned upon *one boy* that the sums paid for groceries were absurd in a time of deflated prices.

There followed a lively discussion as to what it really did cost to buy provisions for their families, one boy remarking that he never before had thought that the necessities of life cost his father so much.

Before leaving the class, I mentioned that I hoped to have an apartment of my own next year, and wondered if they would care to help select and furnish it, naming the amount I could afford for general living expenses. I then hurried away to an appointment and completely forgot the whole matter until three days later, when a frantic principal called me on the phone to say that unless I could help her to stop the sixth grade in their mad career, I might have the sheriff knocking at my door. An explanation revealed the fact that almost before the door had closed on the day of my visit, the pupils had demanded that they be allowed to form committees immediately for the purpose of finding the solution of my problem.

There were apartment and furniture committees; committees on linen, silver, and kitchenware; committees for personal and general expenses, and also one for determining if I could

afford such luxuries as a car, a radio, or an electric refrigerator.

At the noon recess, the pupils had rushed home to question their parents and to examine the morning newspapers for prices on offerings of the day. Competition was running high, and this was well and good.

But the apartment committee, feeling that they were not securing such definite results as others in the class, had taken it upon themselves to interview the superintendent of an exclusive apartment house on the boulevard and had made an appointment for me to look at an expensive apartment that day at four o'clock, with a view to renting it.

The class had not only come alive, it was running away!

Rather terrified at what they had done, the members of the committee told their parents of this business transaction, and one good father, sensing trouble for one whom he believed to be a misguided supervisor, sent his daughter back to the apartment house with this message: "Don't pay any attention to the matter! this is just a new-fangled way of teaching." Pondering this statement, I came to the conclusion that in school, at least, it was a new-fangled method, but in "real life" it dated back to the Garden of Eden, for Adam, too, had learned from experience.

The final outcome of this activity was a very attractive illustrated booklet, containing accurate data, logically arranged, on what I could afford to have for a home. Accompanying the report of each committee, was a letter telling why certain choices had been made, and stating that in case I really took an apartment, one and all stood ready to help me buy the furnishings and arrange them in the new home. It was a matter of great regret to me that I was not able to give them this opportunity.

In this experience, as in most others, the most far-reaching results could only be measured by subjective judgment. All concerned, however, felt that this had been an experience of tremendous value to this group, one mother reporting that "Mary had never done anything in her life in which she took so much interest or from which she had gained such valuable experience."

Slow indeed must be the teacher, principal, or supervisor who refuses to take the cue offered by such an experience. But tradition hangs heavy over our heads. A parent assures me that she *wants* to believe in the value of social arithmetic and hopes she does, but is horrified to discover that her child does not know the answer to 12×12. A teacher informs me that she has no time to teach thrift because her class is not up on the fundamental processes.

We are one and all guilty, for we have been so concerned about covering the course or completing the book that we have had little or no concern that children are learning to make decisions, weigh values, save and spend wisely; in other words, we have failed to recognize the value of social utility as a basis for the selection of subject matter in arithmetic, and the importance of keeping meaning back of practice.

At the present time, the world is realizing, as perhaps never before, that financial security is one of the greatest

boons an individual may enjoy. If, during the last fifteen or twenty years, there had been provided an expanded curriculum that would, in part at least, have helped to prepare pupils in our public schools to meet the economic needs of everyday life, would charitable organizations, city and national governments be bearing the burdens that they are carrying today?

This work, of vitalizing the curriculum, is one of the greatest responsibilities of the supervisor and, I believe, presents the greatest challenge of any of the many problems in the field of supervision.

UNITS OF MEASUREMENT IN INDUSTRY

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[This study is one of a number of basic studies being undertaken to discover the uses of measures in industries, with a view to reaching conclusions finally as to what the schools should teach in denominate numbers. The reader will readily recognize the significance of this study.]

IT is often contended that considerable time should be devoted to the study of numbers in the grades, because of the necessity of using this knowledge by all persons employed in industry. Today, however, the standardization of processes and of products has made possible the production of articles in large numbers. In assembling, specialization is carried to the extreme; for example, a worker may be engaged in placing a single piece in a press or in merely watching or feeding a machine.

New England industries provide great consuming markets for raw material and industrial equipment. It is distinguished as a region of fine manufactures and its products are turned out in finished form ready for the ultimate consumer. The articles in which New England contributed more than half the United States' total in 1929 include woolen and worsted goods, textile machinery, rubber boots and shoes. In cutlery, edged tools, and plated ware, it contributed about half. Many others were near the top of the list, averaging from 25% to 50%, such as cotton goods, jewelry, brass and bronze products, tools and several other products.

The writer selected five typical industries, all located in or near Providence, Rhode Island, as follows: The Gorham Manufacturing Company, a silversmith industry employing about 770 people, The U. S. Finishing Company, a textile finishing industry employing about 437 people, The Grinnell Company, Inc., an industrial piping industry employing about 365 people in the Providence plant, B. A. Ballou & Co., Inc., a manufacturing jewelry industry employing about 132 people, and Universal Winding Company, a winding machine industry employing about 957 people. These industries were studied in order to determine the actual uses made of the tables of measurement by the persons employed in these industries. The method used was that of observation, report of employer and employee.

These five companies purchase gold, silver, oils, dyes, pig-iron, etc., totaling approximately 150 articles, and manufacture and sell silverware, jewelry, machine parts, sprinklers, etc., totaling approximately 10,000 articles.

Eighteen tables of measurement, presupposed to be commonly used in these industries, were listed. These tables contained 93 different units, such as inch, gallon, pound, etc.

In the study of each industry several visits were made to each plant in order to obtain the information desired, and to observe the different steps in the manufacturing processes.

To illustrate one method of measurement, the architectural bronze department of the silversmith industry uses the template system in measuring the pieces of bronze. "A template is a pattern or a mould used as a guide in mechanical work." In order to obtain a number of pieces of exactly the same dimensions, the draftsman makes a pattern on wood the thickness of the bronze. The dimensions and the places to be holed are marked on these pieces of wood. The pattern is then given to a workman who puts it on a machine where it is scribed on the bronze. Then it is cut out by machine, after which the workman must take it to the inspector who is responsible for the accuracy of the dimensions. The template system, therefore, eliminates to a great extent the need of constant measurement by the person on the job.

In order to separate in some degree the persons using tables of measurement from those who do not need this information to carry on their daily tasks in industry, workmen were divided into three classes, as follows: first, second and third.

By first class is meant those having an *expert knowledge* of the units of measure and who are using that knowledge in their work. An example of this class is found in the die cutter, who must be able to use the micrometer and vernier calipers and other instruments, formulae and techniques for measuring and designing accurately all classes of work. This demands special training and a minute degree of accuracy, to .001 or .0001 of an inch. It does not include the workman who simply reads an automatic gauge.

By second class is meant those having and using a knowledge of the common measures, such as linear, square, and cubic measures, and who are able to read simple blue prints. This class, in general, is composed of persons who measure inches, etc., accurately, or who apply a gauge, but who have not an expert knowledge of measurement.

By third class is meant those who do not use or need to understand any units of measure. These persons are usually engaged in press work, assembling, polishing, etc., where little fundamental knowledge of measurement is required, as the machines are automatic, and the process, though important, does not demand the use of measurement.

Modern mass production and organized industry demand exact dimensions, accurate to thousandths of an inch on some types of work. The use of different tools called gauges measures these dimensions quickly and accurately. There are many different kinds of gauges for different kinds of work. This requires accuracy and

dexterity, rather than a knowledge of measurement. The foreman or head inspector and his assistant are practically the only persons who are involved in the understanding of these measurements.

In the five industries studied, the articles purchased, manufactured, and sold were tabulated; a summary of the items of the units of measurement used in these industries was listed. Almost three thousand items were found; of these about one-fifth required more than one unit of measurement. Of this group in which two or more measurements were used, each measurement was independent of each other. For example, in describing a silver coffee pot, the height was given in inches and the capacity in pints.

TABLE I.

Showing Employees Classified on Basis of the Type of Measurement Knowledge Required

	No. Employed	1st Class	2nd Class	3rd Class
Gorham Mfg. Co.	770	83	64	623
U. S. Finishing Co.	437	37	29	371
Grinnell Co., Inc.	365	35	44	286
B. A. Ballou & Co., Inc.	132	21	13	98
Universal Winding Co.	957	111	175	671
Totals	2661	287	325	2049
Percent		11%	12%	77%

Summary of Items of Units of Measurement for Five Industries Studied

(*Arranged according to frequency*)

Inch	1336
Pound (Avoir.)	118
Foot	85
Yard	65
Unit	54
Cubic Inch	52
Ounce (Avoir.)	51
Minute	51
Square Inch	43
Gallon	26
Cubic Foot	25
Degree	25
Ounce (Troy)	22
Dozen	21
Circle	20
Gross	17
Square Foot	16
Second	14
Pennyweight	13
Ton (net)	10
Quart	9
Hundredweight	9
Hundred	8
Grain	5
Pint	4
Barrel	4
Ton (gross)	4
Board Foot	4
Hour	3
Sheet	2
Ream	2
Pound (Troy)	1
Ampere	1
Total	2116
Number of Items requiring more than one unit due to measurement in more than one dimension	660
Total Number of Measures Noted	2776

In summarizing the data obtained in studying these five industries the following conclusions may be stated:

1. Of the 18 different tables of weights and measures listed, units from only 12 were required in the five industries studied.

2. Of the 93 possible units, the study showed that only 33 units were used in these industries.

3. Over three-fourths of the persons employed in manufacturing in these industries did not need to use or understand any units of measurement. In other words, 11% are expert in fine measurement, 12% use the common tables of measurement and read simple blue-prints, while 77% are engaged in tasks which do not require the actual use of any measurement.

4. Therefore, only 23% of these persons employed are using any measuring units.

5. In using these units, the accu-

racy of the measurement is as important as the knowledge of the measurement itself.

6. A table of measurement, as such, is never used in its entirety. Only one unit of the table is necessary as a rule. Those who are working on small pieces using the inch, or parts of an inch, seldom have occasion to use the yard.

7. The units of measurement used in purchasing the raw materials differ from those used in manufacture. Generally speaking, larger units, usually of volume and capacity, are used in purchasing, while smaller units and parts of a unit are used constantly in the processes of manufacture.

8. In the five industries studied, the inch was the most common unit of measurement, the pound (avoir.) ranking second in frequency.

9. A knowledge of standard tolerances allowed, in general, involves only the expert, usually the foreman and men employed in the engineering department. Others may be using a gauge which measures tolerance but they do not need to understand the actual measurements involved.

10. Any commodity is measured in a preferred unit, fixed by trade practice. This is equally true of a measurement used in the process of manufacturing. In other words, a person using a measurement uses it on a commodity, and the fundamental point or basic fact is first, an understanding of that commodity. Handling the commodity with intelligence, therefore, comes first, and knowledge of the unit of measurement follows.

11. Where the thousandth of an inch is the measurement constantly used, the thousandth of an inch is the unit. In general, whatever degree of accuracy is commonly called for, that degree of accuracy becomes the unit of measurement in the operation involved.

As a result of this study, it is proposed that the following tentative suggestions should have consideration by the committee that determines the curriculum in arithmetic:

1. It is not profitable for children in the elementary grades to spend time committing to memory tables of weights and measures.

2. When one understands the commodity, it is not difficult for him to apply the preferred unit of measurement to that commodity.

3. The teaching of addition, subtraction, multiplication, and division of compound denominate numbers has little, if any, value.

4. Reduction ascending and reduction descending has little value in industry, with the exception of the estimating department, whose personnel consists of highly-trained experts.

WHY NON-METRIC MEASURES IN METRIC EUROPE?

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[Theoretical conclusions and acquired prejudices in favor of the metric system receive a rude shock when one investigates at close hand actual usage in the market places and in industry in metric Europe.]

THE pound is a commonly used measure in the retail markets of Belgium, France and Germany. The store window and market labels in Germany are *lb.* and "Pfund" (pound) is employed as the oral designation.

In France the use of the common terms is strictly forbidden, so the pound labels are usually (not always) "½ Kilo." But the conversation is "la livre" (pound), and if you go into any store or retail market in Paris and ask for a "pound" of apples, or nuts, or meat, you are understood and accommodated. The pound you get is the modified French pound of 500 grams, but it is the old term that persists and forms the basis of thinking. The difference is small. The customary pound contains 453.6 grammes.

The makers of the metric scheme designated the *gram* as the unit of weight, but later recognized their mistake and changed to the kilogram. But the kilogram did not fit well into customary thinking and convenience in trading. The housewife does not want a kilogram of butter; she wants a pound. The pound is a convenient unit. So the French people, compelled by severe penalties to use metric terms, took the one-half kilogram (note the "½" please, a common fraction) and called it a "pound."

In the rural districts of France, the "argent," the old French acre, is still the basis of thinking in land measure, and this after 100 years of compulsion, and 125 years of exclusive teaching of the metric system in the schools.

In Germany the metric scheme has been official and taught in the schools since 1870. But the penalties have not been severe, so the old customary terms are used freely. The market and stores everywhere use the pound. The farmer thinks in acres ("morgen") and bushels and uses these terms. He also uses feet, inches, and yards, particularly *feet,* in connection with buildings, bins, farm machinery, gates, fences, etc. In the steel mills of Germany the inch is used almost as freely as the millimeter. There are inch gauges and orders are filled in inches as in England or America. The mile is still in common use in Europe.

Why the failure of the metric system? Why the persistence of the customary units? These were the questions that came naturally to mind.

Just a few words on the second question, before turning to the first for fuller discussion. Our customary units are the result of centuries of natural selection and adaptation to the work at hand. In the long run, customs survive because of their usefulness and convenience, not because of prejudice and conventions. The

yard came to America from Europe. It came into Western Europe with the Roman Empire. It came to Rome from Egypt, modifying the old Roman pace (of about 2½ feet). It is recorded on and built into the Egyptian pyramids.

But the yard goes farther back than the pyramids. We find it in Babylon 2500 B. C., and the cubit and double cubit even at that early date were corrected and modified a little by the astronomers and mathematicians who wanted to relate it to the 1/10,000,000 of a quadrant of a great circle of the earth, according to Nicholson. The "cubit of a man" or the yard derived from it, was a convenient measure for building and for the measurement of cloth. With its subdivisions, one-half and one-third, it came into common usage and persisted. It spread through all the Mediterranean and Black Sea countries. It was adopted in the middle ages by the Hanseatic League. With the beginning of modern history it was carried by the colonizing and trading nations of western Europe to the rest of the world.

Every other customary measure has a history equally interesting and honorable,—the pound for butter and cheese, the quart for liquids, the bushel for grain, the acre for land measure, the degree for circular measure, the knot for speed of vessels, the calendar for time. Each has been tested by centuries of experience and survives by the old rule of the survival of the fittest, viz., adaptation to a purpose.

Why then the metric system? How did it originate? Why the inconvenient units? Why do we hear so much about it? How widely extended is its usage and how acceptable? Has it made progress on merit, or only because of compulsion?

The metric scheme is a product of the French Revolution, which began in 1789. That is a long time ago, but instead of reading up about it, we can use the recent Russian Revolution as a basis of thinking. Possibly 90% of the Russian people were illiterate at the beginning of the recent revolution. The same was true in France in 1789.

In Bolshevic and Soviet Russia power has been seized by groups of doctrinaire theorists, followers of Carl Marx, who advocated communism and a new social order. The Marxian fanatics have sought success through tyranny and blood. They have subjected opposing intellectualists to the firing squad. They have opposed religion and the church. They have loosened the bonds of the family. They have moved toward confiscation of all private property, making the state supreme and the individual merely a pawn, to be moved at will by order of the central committee.

The excesses of the Russian Revolution seem impossible, but they are milder and less bloody than those of the French Revolution. The doctrinaire theorists of the French Revolution were followers of Rousseau and the new order as set forth in "The Social Contract." The slogan was, "Back to nature," supplemented later by "Liberty, equality, fraternity." Those in power were mostly tyrannical and most bloody. The "September Massacres" were followed by the installation of the guillotine, which took its toll in thousands. Landed estates were confiscated and divided. The church was abolished, and the worship

of nature set up. Everything man-made was done away with. A new calendar was constructed, in which September 23, 1792, the date of the proclamation of the French Republic, was fixed as the first day of Year I, in which the months and seasons had such significant names as Germinal, Floreal, etc., derived from the Greek and Latin.

Under these circumstances, it is not surprising that the doctrinaire leaders of the French Revolution wanted to abolish the old "man-made" scheme of weights and measures and substitute a new one based upon a natural unit.

It is difficult for the practical Anglo-Saxon mind to understand what followed. Britain had for six centuries been working on this question of weights and measures. Magna Charta, 1225, promised a uniform system of weights and measures for the entire realm, and from that time to the present there has been occasional legislation in Parliament aiming at better adaptation of weights and measures to the demands of trade and commerce.

No such careful procedure marked the action of the Legislative Assembly, succeeded by the Convention, the first two French revolutionary bodies. There was indeed a resolution calling for a study of existing weights and measures, but this study was never completed, and I find no record of a report having been made. We can understand this only by understanding the make-up of the Legislative Assembly. There were few business men. There were few with legislative or judicial experience. There were few older men. Young lawyers, clergy, particularly scholars and professors, these made up the list. These were the men who demanded a new system of weights and measures "based upon a *natural* unit," and who referred the demand to the French Academy of Sciences for report.

The scheme reported back by the Academy of Sciences in 1792, did not contain the value of any unit.[1] These were to be determined later, after some acceptable natural unit had been measured. But the scheme did present names for all measures, with multiples and subdivisions on a decimal basis. The names were all new,—none had been despoiled by use in trade. They were the work of a lexicographer, who had selected significant terms and had used Greek and Latin derivations to indicate multiples and subdivisions. Although the specific value of no unit was indicated and no one knew whether or not they were convenient trade units, the report was *adopted as presented, unanimously and without debate.*

The next thing for the National Assembly to do, was to find out the values of the units adopted. It was decided that the metre, the name for the new unit of length, would be the basis of the entire system of weights and measures, and that its value should be fixed as one ten-millionth part of the distance from the equator to the pole on the meridian passing through Paris. This was to be the "unit from nature." It was a little inaccessible, to be sure, and really no more natural than the height of a man, or the span of a man's reach, or the length of a

1 Note: This official document of 168 pages is in the library of the International Institute of Weights and Measures, at Sevres, near Paris. I read the entire document carefully when in Europe last year.—G. M. W.

sizable man's foot, or the length of the thumb to the first joint, and similar items that helped in giving us the customary yard, foot, and inch.

In their youthful haste to try out their new system, a provisional meter of 3 feet 11 442/1000 lines was adopted in 1793, based upon a 1737 survey. This was changed to 3 feet 11 296/1000 lines, in 1798, after the section of the meridian had been measured and the quadrant distance redetermined. This was later found to be inexact.

Finally, the values of the units were agreed upon, and the system promulgated. Other systems were forbidden and penalties attached. The result was complete failure. The practical-minded Napoleon came to the rescue in 1812. He legalized the use of the "useful units" in trade. He retained the teaching of the metric system in the schools and for use in official reports. This last was a mistake. He should have abolished the metric scheme entirely and combined with other countries to standardize the customary units. But Napoleon was a fairly busy man.

In 1840, after forty-five years of teaching in the schools and official use, the old measures were again forbidden in trade, accompanied by a scheme of severe penalties. Even the action of the courts was anticipated and legislated against. Yet, today we find non-metric measures surviving everywhere in metric Europe, and even in France, where compulsion and penalties have been applied most severely. Why the failure?

The claims of the metric theorists were:

1. The basis a "unit in nature."
2. Close interrelationship of the different tables (length, weight, capacity).
3. Complete decimalization. "This," declared La Place, "is the very cornerstone of the metric system," and he held stoutly against legalizing the fractional usage of the new measures.

These claims look well on paper and they make a strong appeal to the academic minded.[2] Let us examine these claims.

The first claim, a unit in nature, had to be abandoned when later measurements showed that the metre, as determined, was not the 1/10,000,000 part of the meridian quadrant. The claim was officially abandoned by the French Government in 1869, and the meter defined empirically as the length of a certain bar. (Just as the British yard is defined.) This nature myth, therefore, resolves into thin air.

The second claim of interrelationship of tables has theoretical advantages only. Theoretically we can figure the weight of a thing by knowing how much water it displaces, but we seldom or never find the weight that way. We want a pound of rice or butter direct, without immersion in water. In short, here again mere theory and no practical trade usage. (An exception—the chemical laboratory.)

As to the third claim, it may be stated without fear of facts to the contrary, that decimalization is no more common in using metric units

2 Note: Such as we. I had accepted the claims of the metric advocates without question and was disturbed and annoyed when I first noticed discrepancies between my theory and the practice which I was compelled to observe. Later I decided to get to the bottom of the matter. Data will be published later.

than it is when customary units are used. I stand near the counter in a department store in Paris to see how they sell cloth. I find it sold by the meter, ½ meter, ¼ meter, exactly as in Boston by the yard, ½ yard, ¼ yard. I find butter sold in the market by the pound, ½ pound and ¼ pound, just as in America (the pound is a half-kilo). The man on the street corner sells his chestnuts by the liter, ½ liter, ¼ liter. In the wholesale vegetable and fruit market, I find much of the produce sold by the basket and I'm inclined to think that this is a survival of our convenient bushel. There is no similar convenient metric measure.

In America we decimalize in very refined measurement, such as the decimal of an inch in valve-stem measurement. We also decimalize in statistics. The average yield of wheat per acre is expressed in bushels with a one or two-place decimal.

In short, the decimalization advantages of the metric scheme are pure theory. Actual usage does not show any practical advantages of metric over customary units. There are some disadvantages.

With the evaporation of theoretical advantages, we must turn to trade usage, and when we do this we find merely certain empirical metric units which we are asked to substitute for our customary units. Briefly, these may be listed as follows:

metre—instead of yard.
millimeter—instead of inch.
liter—instead of quart.
½ kilogram—instead of pound.
kilometer—instead of mile.

There is no convenient foot, gallon, or bushel in metric. In any case where the difference is noticeable, the advantages are with the customary units, with one exception. That exception is the laboratory of the experimental chemist. Other cases favor the customary units.

In short, we may generalize the comparison about as follows:

(1) Any metric unit which has been readily accepted is a close approximation to a customary unit.

(2) Metric units which do not closely approximate customary units have been accepted slowly and unwillingly, if at all.

(3) Metric units are halved and quartered exactly as the customary units. Decimalization is used in statistics and refined measurement, but is not more used with metric units than with customary units.

Thus it gradually becomes clear why customary, or non-metric measures, persist in metric Europe. The customary units are more convenient and better suited to trade conditions. They persist because of inherent merit and in spite of compulsion.

One other of our questions may be considered: Why do we hear so much about the metric system?

For answer, we may reply briefly: Why do we hear so much about Russian communism? In each case it is organized propaganda, based upon theoretical statements and vague, impractical claims.

The French revolutionists sought to carry their doctrines to the rest of the world, and they systematically organized their propaganda to this end. For verification of this statement see "The French Revolution," by A. Sorel, Paris, 1885, on the importance of pro-

paganda in the revolutionary movement.

With the restoration of the French monarchy, the academicians of France seemed to realize that most of their theories were in the discard. It was at this time that the mathematician La Place and others sought to revive interest in the metric scheme. From that time to the present, but more especially since 1869, there has been skillful and persistent diplomacy and propaganda in favor of the metric scheme. This has included much government coöperation.

The French intellectuals thus hope to "conquer the world" for the metric scheme just as Russian officialdom hopes to conquer the world for communism. For verification of this statement, see the 256-page volume on "Le Système Métrique Décimal," prepared by the French Government for distribution at the International Exposition at Liege, 1930. One cannot read the early pages of this volume without being impressed by the theoretical and impractical character of the plans which led to the creation of the metric scheme. Nor can one read the last fifty pages of this volume without realizing its propaganda purposes and the evident desire of the French leader to conquer the world for the metric scheme, regardless of its inherent shortcomings. The most startling characteristic of this volume, to one who has checked carefully on business practice, is its total disregard for the truth. The volume is full of wishful statement glorifying "le systèm métrique décimal," neglecting entirely its shortcomings and its practical failure. Only the academic character of the membership of the International Institution of Weights and Measures makes possible the insidious propaganda in favor of the metric scheme.

The persistent propaganda for the metric scheme, accompanied by sweeping general statements as to its merits and progress, are a little annoying to anyone who has acquainted himself with the error and failure on which the scheme rests, or who reflects that there has been little progress for the scheme except under compulsion. *Good laws* merely crystalize the established practices or ideals of a people; they do not impose a reform of doubtful value upon an unwilling people. There are some states in our Union where prohibition does not meet this test of a good law. There may be justification for prohibition in the moral purpose behind it, but there could be no such justification for a new system of weights and measures, less convenient all told than our present plan, involving no end of annoyance and expense for enforcement, and resulting finally in merely giving us two systems instead of one,—for after one hundred years we would still have the old system with us, exactly as they have in metric countries of Europe today.

The manufacturing and trade of the world are still largely non-metric. It would be simpler and easier to get along without metric units than without customary units. We need not ask that the metric units be abandoned or legislated against. We can reasonably ask that metric propaganda cease and that metric units be left to win or lose on merit. We should avoid compulsion.

USEFUL AND INTERESTING ARITHMETIC FOR CHILDREN

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[Here is a picture of the new possibilities in arithmetic—100% mastery of the fundamentals, greater interest and better understanding, and the absence of pressure or failures.]

THERE is no doubt but what arithmetic has caused more sorrow and failure among our elementary school children than has any other one subject. Because study has shown that the arithmetical processes used by adults are few and rather simple, it has been possible to eliminate from our arithmetic curriculum in the elementary schools much that was formerly considered important and essential. By lessening the number of processes to be studied, we provide more time for drill upon the fundamental processes of addition, subtraction, multiplication and division, together with their application to life situations that come within the experience of the child. This, and the study of simple fractions, percentage and interest, will give necessary understanding and basis for arithmetic as used by the average adult.

The learning of abstract facts in all fundamental processes has been postponed until the child has been surrounded with arithmetic material and has had a great variety of number experiences. Various activities of the schoolroom afford ample opportunities for him to see the value and use of learning to count, to add, subtract and make change. Most of our adult problems have to do with running an automobile, shopping at various kinds of stores, and running a house on a stated income. So the child applies his knowledge of arithmetic to problems based upon situations with which he is familiar.

Perhaps the happiest outcome of this change in content is the attitude of the child toward the entire subject of arithmetic. Many number experiences and the happy approach from concrete understandable applications has made the introduction of abstract drill an interesting activity rather than a dreaded ordeal. Responsibility placed upon the child for accuracy and the correction of his own mistakes, make for earnest and unceasing striving for the desired results.

In the first grade we count and count and then count again. We count the children who are present. We count the children who are absent. With the teacher's help we add the two results to see how many children belong to the group. We count clean handkerchiefs. We count milk bottles. We count papers needed for each row. We count boys; we count girls. We count clean hands by twos. We count the money for milk luncheons. We count the money brought in for banking. Whenever there is even half a

chance we count by ones, by twos, by fives, by tens.

In a moment a little first-grade boy or girl may become a trained seal. Just put a crepe paper bow around his neck and he kneels and either barks or claps his flippers the exact number of times the figures written on a card held by his trainer indicate that he should. The right number of barks calls for applause from the interested audience.

Many rhymes with number content bring happiness and understanding. The clock tells us when to go to bed, when to come to school, when to have milk luncheon, and many more important things. A telephone directory, in which each child writes his own telephone number, gives practice in writing as well as in reading numbers. With each new month comes the study of the calendar, giving special attention to holidays and birthdays.

In one first grade each child made a paper house to represent his own home. On the door was his own house number. Below the house in a blank space he indicated the number of people who make up his family. When the door was opened, there they were, all cut out, dressed in color, named and numbered. It was a wonderful achievement to take home to mother and the rest.

Many activities are of short duration, but sometimes they may extend over a longer period of time. In one first grade the preparation for and the holding of a Valentine Sale covered a period of two and a half weeks. During that time at intervals posters for advertising the sale were sent to two other first grade rooms. The first was a large red question mark surrounded by red hearts; the second read, "What is going to happen next Wednesday?"; the third said, "Can you wait?"; and the fourth, "The day is here. Come to a Valentine Sale in Room —, at two o'clock this afternoon." Within this period twenty-three kinds of valentines were made in sufficient quantity to supply seventy children with at least two apiece. Price tags were made to stand upon counters. Price lists were printed showing samples and the price of each. Posters in the shape of hearts were made for reference, so that there would be no mistakes in finding costs, as each child was allowed to buy two valentines. When the long anticipated day came, the desks were arranged in a hollow square with a cashier at each corner. On the desks or counters were the valentines properly marked, inside the desk an extra supply. Each child had a band on which was printed, "Salesman," "Salesgirl," "Cashier," or "Information," as befitted his position. The one who served as "Information" walked about to superintend affairs. The customers were the children of the other two first grades, who came with real money, a nickel and five pennies, which was provided by the teacher. Each child could buy two valentines. The clerk gave the buyer a slip indicating each separate item with the total of his purchases. He took this slip to the cashier who verified the addition and accepted the right amount of money and stamped the slip as a receipt. It was a real sale. Real money for real purchases. To be sure, the money was returned to the teachers when the sale was finished, but the children felt the satisfaction of accomplishment.

In the first grade, combinations were kept simple. All facts that are used in stores or in games are kept before the children, with the answers, so that there may be no mistakes. In the second grade, we proceed in the same way, all the time increasing the difficulty of the activity as the child grows in ability. Games requiring scoring are used generously, each child getting his opportunity as score keeper. Here the combinations are carefully planned and are always in sight with the answers. A child discards their use as soon as he *knows* the answer. Throwing bean-bags through holes, rubber rings on hooks, knocking down tenpins, afford opportunities for the use of numbers. Always the thought that the game is being played partly for its help in the teaching of arithmetic must be kept in mind, and conditions are modified sometimes to secure this result.

Stores are kept in almost all grades. The transactions at these stores grow in difficulty. A first grade store may contain articles made by the children, which may be bought and paid for by presenting the storekeeper with the sum of money called for by the price list and requiring no change. In the second grade, the customer may buy two articles and receive change if necessary from the storekeeper. All combinations that can be made from marked prices are posted with the answers. The storekeeper must count in the right way in making change. Mary bought articles amounting to nine cents and gave the storekeeper a quarter. "9, 10, 20, 25 cents," he says, and she makes room for another customer.

One second grade made and equipped a post-office. This activity was started after a visit to a real post-office, where the work was carefully explained to the children. For days the interest ran high as they made stamps, signs and letter-boxes. They made up parcel post packages. They learned how to weigh and stamp them according to zones. They wrote letters and mailed them to friends, for all had mail boxes. A postman made deliveries. They learned of different methods of transporting mail,—trucks, trains, steamboats and aeroplanes. Much useful information was gained, together with a satisfaction of achievement.

A group of sixth grade children decided they wished to have a remnant sale. They brought from home pieces of percale, silks, chiffons, velvets, and many other kinds of material. They discussed the matter and decided that you generally bought materials in certain lengths, 1/8, 1/6, 1/3, 1/4, 1/2, 5/8, 5/6, etc., of a yard. Then they measured the exact length of the remnant and marked it the nearest part of a yard that was a customary buying length. Using the cost per yard as a basis, they priced and marked each remnant.

Having a cashier these children decided that it would be well to know how much money she had on hand before the sale started, so they listed on the board and in their note books the amount of cash, as:

5	$2 bills	$10
10	$1 bills	10
15	half dollars	7.50
16	quarters	4
17	dimes	1.70
13	nickels	.65
25	pennies	.25
		$34.10

As the children in this neighborhood lived quite a distance from small stores and came from families where charge accounts were generally used, they needed the experience of making change, so they bought the remnants, paying for them with any amount of money up to five dollars. The experience gained was worthwhile. Cafeterias, lending libraries, moving picture theatres, and other activities sometimes take the place of the store.

In planning and carrying out an informational arithmetic unit one must remember that such an activity is not for drill work, but for the working out of some life situation with the children. Furnishing a house, planning an automobile trip, estimating the cost of a party, a Thanksgiving dinner, or a winter outfit, are worthwhile if carried out as a real enterprise under real conditions.

The real drill in abstract work is begun in the third grade and carried on through the remaining years of the elementary school. In fact, it probably should be continued with some pupils for a longer period. Addition and subtraction are taught in the third grade and here, as in all our work with the fundamental processes, we work for 100% accuracy. In Newton we are using the Wilson Drill Service as the basis of our teaching, together with his Diagnostic and Inventory Tests. When a child has completed all the steps taught in these services he has had presented to him all the difficulties of the process in such a reasonable way as to assure success. From the beginning he is taught to card all new facts and all facts on which he fails in order that he may drill himself on his own failures and make himself more perfect. The responsibility is his and he is willing to take it.

To card a fact use a card, 2″ x 3″, or any other usable size. On one side put the combination with the answer and on the other side the combination without the answer. When a child has carded a group of facts he is in a position to drill himself or to work with a friend in perfecting himself in knowing the answers to these facts. He works only on what he himself does not know and discards from the cards on which he is working those which he learns. A whole class working in pairs or in groups can gain noticeable results in a short time.

Children are not taught in masses but in groups that work at their own rates. These groups may contain few or many, but not too many children, and are constantly changing as children achieve. Mastery of the processes of addition and subtraction is the aim of the third grade with their application to figuring in life situations.

The fourth grade has as its main drive multiplication in all its phases. Again we card the hundred simple multiplication facts using them according to groups as designated in the Wilson Drill Service. Reviews of those addition steps needed in multiplication are carefully planned, using those combinations that are required in the particular step of multiplication that is being learned. Carding of mistakes makes for carefulness and accuracy. Short division only as the reverse of multiplication is taught. If 24694 divided by 9 is never done by short division in adult life, why should we teach it to children? Long

division is much simpler and more accurate.

The teaching of long division comes in the fifth grade. After the drill of the preceding grades the children are ready for this process. "Long Division is Fun" written on the board in one fifth grade showed the attitude toward that subject in that room. Drills in multiplication, subtraction and simple short division must be planned which have direct bearing upon the Long Division examples that are being taught. Mistakes in these processes are more common than lack of understanding of the Long Division process. Here again the children must be held responsible for their own failures on facts and must card and drill that they may be more accurate. Again use must be made of the Diagnostic and Inventory Test to determine individual needs.

In this grade, too, comes the teaching of addition and subtraction of simple fractions. Small denominators are used because life situations rarely involve fractions with larger denominators than sixteenths. In fact, ½ makes about ninety percent of all fractions needed in life. Common measures are learned through use and children build their own tables for reference through experience. Simple graphs for pupils' records are used. Charts showing gain in weight or achievement in the various school subjects make them of real worth.

In grade VI we aim for 100% accuracy in the four fundamental processes, and in simple fractions and decimals. We try to confirm the habit of checking and of judging the reasonableness of answers. Simple decimals developed from the use of U. S. money are studied. In this study of decimals all fundamental processes are taught but are limited to three places except as specific occasions arise for more in any informational unit. Denominate numbers, simple business accounts and such percentage as is needed in work with weight records, attendance reports, milk records and bank accounts are taught to the children of this grade.

From the beginning of grade one through all the grades, much work is done with United States money. All grades work with informational units increasing in difficulty with the growing abilities of the children. To each grade is given certain main drives together with constant review and drill on the fundamental processes working all the time toward 100% accuracy. Constant intelligent use of diagnostic and inventory tests points out individual needs that must be met.

The success of incidental and informal arithmetic as of drill depends upon the interest and initiative of the teachers and their willingness to depart from the ancient traditions. Our teachers are not only interested but enthusiastic for the newer plan.

In the past, formal drill and study of multiplication tables began in the first grade. Now we give the children many number experiences through the first two grades, beginning abstract drill in the third. From that time until the end of the elementary school it is well planned, thorough and unceasing, working continually for 100% accuracy. Mr. Wheeler, the Superintendent of the Newton Schools says that in Newton the three R's have never been better taught than they are today, that the child knows the formal arithmetic as well as in the past and that he understands the processes better.

CONFUSIONS IN LEARNING

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[Confusions are a cause of discouragement and failure. Confusions are largely teacher induced.]

AMONG the more interesting problems which confront the teacher is that of the child who fails to achieve up to his capacity in one or more subjects. It often happens that even though the best efforts of the child and of the teacher are focussed on the difficulty, the child continues on his learning plateau or makes only a very slight gain. In the elementary school, reading, arithmetic, and spelling give the most serious difficulties of this nature, while in the high school special disabilities seem to occur frequently in mathematics and foreign languages.

Special subject disabilities often go unrecognized unless they become exceptionally severe. Failures in learning are interpreted as evidences of low intelligence. Group tests of intelligence often tend to bear out this conclusion. If the difficulty happens to be in reading, the group intelligence test, usually based largely on reading, will show a low score. If the test includes mathematical problems, the child may be sufficiently confused on that section of the test to lower his total score enough to "explain" his arithmetic failure. Many school systems are now alert enough to follow up all learning failures with individual tests of intelligence, even though the failure seems to be explained by the low score on the group intelligence test. During the present semester one school department which makes such a follow-up on its children who fail, referred twenty-five children with reading disability to our educational clinic at Boston University. Although each child had a Stanford-Binet mental age of more than eight years and had been in school three or more years, none had gone beyond first grade level in reading. Physical examinations were negative. All had come from schools in which reading was well taught, if one may judge by grade scores on standard tests. Such learning failures are not uncommon. Difficulties in arithmetic and spelling also appear frequently among children who have good mentality and no difficulty in learning other subjects.

There are many physiological and neurological guesses at the causes of special disability in school subjects. Some learning failures are accounted for by sensory difficulties or physical conditions which make attention difficult. A great many fatalistic psychological notions regarding the causes of such difficulties have been carried over from faculty psychology and from misconceptions about hereditary traits. Too little attention has been paid to confusions in the learning process itself. It is impossible to avoid some errors on the part of pupils in learning any subject. If the confusion produced by errors leads to mental block-

ing, additional confusion, discouragement, withdrawal of attention, or to meaningless activity induced by fear of failure or ridicule, the child often stays on the learning plateau for a long time.

Many confusions seem to be caused by starting to teach the subject to the child before he is mentally mature enough or has an adequate background to learn at the normal rate. It is often the case that the child starts the first grade with a mental age of less than five years, or a full year below the average of his class. The rate of learning in reading is such that the child spends a year of confusion, guessing at the flash words and trying to memorize the stories which go with the pictures. The next year, with mental age almost up to the average of the first grade, the child continues his habits of guessing, and at the end of the year, having spent the required two years in the grade, he is passed to the second grade with all his confusions and no hope of catching up. In any drill learning, even in classes with homogeneous mental grouping, the rates of learning of pupils will show marked variations. If no provision is made for different rates of learning, the child who has difficulty at the start will often find the gap between the class and himself constantly widening. While as yet there is no conclusive evidence regarding the minimum mental age at which to start any school subject, the experimentation with measures of reading readiness and arithmetical background should eventually yield reliable methods for determining whether a child is ready to start these subjects.

Unsuccessful methods of word recognition are common in beginning reading. The cues which children use to recognize words often lead them into error. Usually the word is recognized by a single outstanding letter. The word *dog* is most commonly misread as *girl,* probably on account of the *g* being the cue for the latter word. One child read *way* as *with-at-yes.* A boy failing in the first grade volunteered to write *Come with me to the tree,* and produced *o-w-e-t-h-ee.* He immediately said that *"o* is a bad one because you can never tell whether it means *come* or *go* or *boys."* Meek[1] presents interesting data on cues used by children in learning to recognize words. The analysis of errors in oral reading through the method used by Monroe[2] is an aid in locating and correcting errors of this type.

Difficulty in word mastery appears also through confusions on the auditory side. Through an overemphasis on sounding, a child will often sound each letter individually, look away from the word, repeat the last sound and search for a word to fit. Many seeming "reversal" confusions come from this source. Faulty enunciation appears to be at the root of some confusions in reading. In not enunciating the word clearly, the child has difficulty in meaning and memory and his reading becomes a conglomeration of slurred sounds. In some cases a child will make reading entirely a process of word-solving, and though he may make high scores on pronun-

1 Meek, L. H. "A Study of Learning and Retention in Young Children." Teachers College Contributions to Education, No. 164, 1925.

2 Monroe, M. "Methods for Diagnosis and Treatment of Cases of Reading Disability," Genetic Psychology Monographs, October and November, 1928.

ciation tests, he can do little with words presented in a flash apparatus. Such a child usually shows a complete absence of phrase reading. A study of his eye movements will show a great many fixations per line with numerous retrogressions.

Faulty habits of all sorts help to induce confusion in reading. Habitual repetition of words and phrases, ignoring of punctuation, long periods of study on difficult words, skipping of lines and words, and marked vocalization and head movements, all tend toward meaningless reading. Any overemphasis on the mechanics of reading may lead toward inattention to content. "Word calling" and "word seeing" are often chronic conditions of inattention derived from a long-continued struggle with the mechanics of reading, or with a similar struggle with unfamiliar vocabulary or poorly motivated reading.

The devices used by children to derive answers in arithmetic are often masterpieces of ingenuity. A bright ten-year-old explained that the easy way to add and subtract is to count around an imaginary clock. Another boy used real and imaginary fingers for the same purpose. Imaginary yardsticks are common. Such devices as these are resorted to in that period in which the child is asked to "think" to find the answers to combinations that should be automatic. Habits of counting, although producing accurate results often enough in simple problems, lead to difficulty in speed and accuracy in more difficult operations. Sources of difficulty in arithmetic may be located for the individual child by a tabulation of his errors on different types of problems. If one watches the child work problems which give him difficulty, the causes of inaccuracy and slowness can often be located. The use of well constructed inventory tests is an aid in locating sources of confusion, although many faulty habits can be found only by watching the child work.

Much trouble in arithmetic comes through the improper grading of the difficulty of material. If difficult processes are introduced before the easier ones are completely mastered, confusion may be expected. Any single weak combination may prove the cause of trouble later on. Some confusions come from changes of method from one grade to the next. It was not surprising that a fourth-grade girl had difficulty in overcoming her subtraction troubles when it was found that her teacher taught her subtraction by one method, her mother by another, and a helping teacher by a third. The child with "no number sense" often is not discovered until he starts multiplication. Then the fact that he confused the basis operations brings to light that he is simply putting down meaningless figures, or is saying numbers uncomprehendingly. The difficulty with the vocabulary and the unfamiliar goods and transactions, as well as the obvious absurdities in many written problems, may account for much of the difficulty in reasoning problems.

A special teacher trained in methods and diagnostic testing in the tool subjects could be of great assistance to children who have arrived at a plateau of confusion in school subjects. Seldom will she be able to find the original cause of the difficulty. Yet, if the child's present confusions are stud-

ied and well-motivated remedial measures are planned to fit his specific difficulties, rapid progress usually follows. We have been much too apt at showing, through psychological tests and blame-shifting, why the child can't or won't learn. A label of "non-reader," or "non-mathematical mind" does not indicate lack of ability. It usually means that the child is confused somewhere in the learning process.

A PARTIAL SURVEY OF STUDIES PUBLISHED IN 1930 IN THE FIELD OF ARITHMETIC METHODS

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[Accepting an earlier date for the arithmetic number of EDUCATION *prevented a more comprehensive study than is here presented.]*

AN incomplete survey of the contributions, published in 1930, in Arithmetic Methods yields to date few studies which can be called researches. Perhaps Overman's[17] study of "Transfer of Training in Arithmetic" is the only one which can be classified as a major research. This experiment, carried out in 1927-1928 in twenty second grades in Toledo, was repeated in 1928-1929 in sixteen second grades in Toledo, one in Bowling Green and fourteen in Findlay, Ohio. The author states his purpose "to study the effect of instruction on three types of examples in two place addition upon the pupils' ability to handle closely related types in three place addition and three place subtraction."

The grades were divided into four different groups, a different method of instruction being employed with each of the groups. Group A was shown how to perform the process with no generalization or rationalization. This became the control group. Group B was helped to form the generalization that the numbers must always be written so as to keep the right-hand column straight. Group C was taught by the rationalization method, in this case discussing the principal that ones can only be added to ones and tens to tens. Group D was taught both the generalization and rationalization as described above. A test-series consisting of three tests was given to each group four times, at the beginning, at the end, and twice during the experiment. Data are fully presented in 44 tables and 15 figures. The author's findings are, in general, as follows: On examples involving the placing of numbers having different numbers of digits, generalization alone increased the transfer by 45.1 per cent, rationalization alone increased it by 15.5 per cent, and generalization and rationalization combined increased it by 36.9 per cent. "It appears, therefore," says Overman, "that aid in generalizing the process was an effective method of increasing transfer with pupils in the second grade." There were no large or reliable differences between

the two sexes with respect to transfer. In general, there was an increase in the amount of transfer with an increase in mental age. A bibliography of 38 references is followed by a 76 page appendix of tables, tests and directions to teachers.

While the study of "The Learning of the One Hundred Multiplication Combinations," by Norem and Knight,[16] was conducted with only 25 third grade pupils, an individual drill and test program being impossible with a larger group, the treatment of the material may lead to its classification as a major research. Since a summary of this study occurs in the discussion of the 29th Yearbook of the National Society for the Study of Education, none will be given here.

A minor research by John "deals with The Effect of Using the Long Division Form in Teaching Division by One-Digit Numbers." This study was conducted in two fifth grades which had the same teacher, the same amount of time and the same material. Both grades were taught one-digit divisons before two-digit divisors. Five group and four individual tests were given. Results of the group tests show: I. Before pupils were taught to divide by two-digit numbers, the group dividing by one-digit numbers by means of the short division form showed greater speed, and the group using the long division form showed the greater accuracy. 2. After divisors of two or more digits had been taught, the pupils who were taught to use the long division form in dividing by one-digit numbers were able to solve examples with either kind of divisor more accurately than the pupils who were taught to use the short division form in dividing by one-digit numbers. 3. Pupils who were taught both forms tended to use the long division form in all examples regardless of the fact that they had been taught to solve examples with one digit divisors by means of the short division. Similar findings resulted from the individual tests.

The limitation of this partial survey to the published material has been due to the unavailability at present of the unpublished theses and dissertations of the period under consideration. However, at the risk of inconsistency, one unpublished study will be inserted here. A "Study of Arithmetic Errors," by Spencer,[19] does not fully qualify as a research, but the excellent organization and complete presentation of data put it far ahead of most field studies. The Spencer Diagnostic Test Forms A and B of were given on successive days to approximately 600 sixth grade children. Data are very fully presented in the 158 pages devoted to chapters on subtraction, addition, multiplication, and division. The author finds: 1. 80 per cent of the subtraction, 75 per cent of the addition, 50 per cent of the multiplication, and 70 per cent of the division errors fall under categories of typical errors. 2. The errors studied are typical of the individuals as well as of the groups who contributed them. 3. The more involved an example is the more errors it will produce. 4. Errors are due to inherent qualities of the number system and to defective teaching and learning.

Field studies have been made by Foberg[8] on "The Effect of Courses in 'The Teaching of Arithmetic' Upon Arithmetic Skills"; by Newland[15] on

"Specific Illegibilities Found in the Writing of the Arabic Numerals"; by Edwards[6] on "Errors in Percentage," and by Carson and Wheeler[4] on "Rehabilitation in Arithmetic with College Freshmen."

Case studies are reported by Evans,[7] Trousdale,[20] and Whitson.[21]

A worthwhile summary of studies of subtraction methods by Ruch and Mead[18] is to be found in the 29th Yearbook of the National Society for the Study of Education. A summary by Foran[9] of general principles pertaining to the teaching of Arithmetic would be of greater value if sources were more specifically noted.

The Board of Education of New York City[1] has published summaries of error studies in multiplication, division, common fractions and decimal fractions, which were taken from an earlier complete report by Lazar.

Discussions have appeared by Colwell[5] and by Myers[14] in division; by Butler,[3] by Jones,[12] and by Breuckner and Kelly[2] in common fractions, by Herr[10] in checking calculations, and by Knight[13] on methods in general.

It is to be regretted that so little major research in methods has been conducted during this period.

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RECENT SIGNIFICANT RESEARCHES SUMMARIZED FOR THE BUSY SUPERVISOR

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CHILDREN learn much of elementary number before entering school, through experience and contact, according to two significant studies. The proper inference is that the schools, in grades one and two, should continue the same sort of experience and contacts, deferring systematic drill. See Buckingham and McLatchey: 29th Yearbook, National Society for the Study of Education, pp. 473-524; Woody, Clifford, Journal of Educational Research, Oct. 1931, pp. 188-201.

An experience basis is a significant factor, possibly the determining factor, in successful written problem work. Written problems should be developed in the form of significant units, based upon community contacts. The isolated textbook problem should be abolished, since it leads the child to figure in hundreds or even thousands of unfamiliar situations. See Fourth Yearbook, Dept. of Superintendence, 1924, pp. 173-220; Brownell and Stretch: Effect of Unfamiliar Settings on Problem-Solving, Duke University Press, 1931. This second reference give negative results. This may be due to the very simple form of the traditional isolated problem used in the study. Further research is needed.

If experience is properly capitalized, drill kept behind meaning and properly systematized, then 100% results are possible in the simple fundamentals needed for 95% of all adult figuring. Thirty teachers with 1069 children have demonstrated this in Lawrence, Mass. The National Education Association program on drill was carried out: addition and subtraction in Grade Three, multiplication and short division in Grade Four, and long division in Grade Five. Reports in this issue of EDUCATION show similar results in co-operating schools. See Wilson's article on New Standards in Arithmetic, Journal of Educational Research, Dec. 1930, pp. 351-360; the article by Calista Roy in this issue.

The work in denominate numbers can be greatly simplified. Average business needs of adults do not require addition, subtraction, multiplication and division of compound denominate numbers, nor reductions, nor the committing of tables. Adults learn measures incidentally in connection

with handling, purchase and sale of commodities. As a rule, only a single unit is used in purchase or sale of a commodity; the table relations of a unit are of little significance. The learning of a unit of measure should await the intimate knowledge of a commodity to which it is incidentally connected in purchase and sale. Some help is given in the article by Wilson on "The Metric System," in this issue of EDUCATION. More specific help is given in the article by Louth. Further data are being compiled.

Data continue to accumulate showing the advantages of deferring drill until the child is really ready for it. Washburne's extensive data strongly support the following: No drill in Grade One; addition and subtraction, Grades Two and Three; multiplication, Grades Four and Five; short division and fractions, Grade Five; long division and decimals, Grade Seven; percentage and mixed numbers, Grade Eight. This significant article appears in the Journal of Educational Research, March, 1931, pp. 210-231.

The busy supervisor will find a general summary of the present situation in arithmetic, with suggestions on the needed next steps in a brief article by Wilson in the Journal of Educational Methods for November, 1931, pp. 65-72, entitled "The Present Impasse in Arithmetic."

THE PRACTICAL ARTS COURSES IN THE EDUCATION OF YOUTH

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[In Professor Mays' opinion the practical arts courses are the ideal instruments with which to build up the habit of analyzing and planning the jobs to be done. Whether you agree or not, you will find his article as practical as his subject.]

THE practical-arts courses are significant only to the degree in which they are found to be genuinely educative. And they are educative to the extent to which they produce desirable kinds of growth, for education is primarily concerned with growth. Desirable growth seems to be that which results in greater knowledge of life and its environment, more useful habits, more effective skills, better attitudes, loftier ideals and nobler purposes.

Now, modern life is amazingly complex and difficult to understand. The profound mysteries of life have always been perplexing, but today the mere externals of ordinary activity are too bewildering for most of us to comprehend. Modern life is a veritable maze of mechanical devices, economic puzzles, social questions, political novelties, and innumerable unsolved problems. Contrast these conditions with the relatively simple life of the pioneer who uncovered our continent for us, if you would come to an appreciation of the demands upon the versatility and understanding of the modern man. The school today

must carry a large share of the burden of interpreting contemporary life to the young, and equipping them to meet wisely and effectively its challenges. Obviously, such education must be many-sided and rich in meanings, in interests, and in growth-producing qualities. A large part of the work of the schools will assuredly be concerned with the contents of books —books which give clues to the interpretation of life. But mere books cannot lead to the needed understandings. Books can give only vicarious experiences at best, when they deal with material objects, technical processes and physical activities. To understand such, one has to learn through the muscles. Thus, modern education, as interpretation of life, must offer many opportunities for physical participation in typical life activities. Such a program of education inevitably requires provision for participation in the typical occupational activities of those who are engaged in the practical arts which are characteristic of our civilization. One who has not studied the practical arts of contemporary life through his hands, cannot possibly have an adequate appreciation of their influence in the lives of those practicing them as means of a livelihood. The extravagant statements of certain theorists about the dire spiritual and emotional effects of machines and of repetitive manual operations, indicate the lack of understanding which may result from omitting practical-arts experiences from the program of one's education. The practical arts constitute too large a part of the environment of civilized life today to be ignored in any school program having as one of its purposes the interpretation and understanding of life and its setting.

But, merely to understand life and its background in nowise insures effective living. One must be able to do far more than understand life; he must participate in its activities and be active in dealing with its problems. To take part intelligently and effectively in modern life, it is necessary that one be well equipped with useful, constructive habits; and in a civilization as complex as ours, such habits must be extensively generalized. Now, for some reason, the habits developed by the study of books, as it is carried on in our schools, do not seem to play any vital part in the practical work of life. Perhaps too little attention is paid to building habits upon broad foundations by academic teachers. Perhaps the relation of school books to the activities of daily life in the world of work seems too remote to boys and girls. Whatever the cause, the failure of the traditional study of textbooks to establish important work-habits is notorious. At this point the practical-arts courses in the schools have their supreme opportunity. The activities of these courses are to the young people themselves obviously like those of the great world of affairs toward which they are looking. When properly organized, the courses in home-making, commercial work, agriculture, and industrial arts, which are offered as practical-arts experiences, are typical of the activities of the great divisions of vocations which they represent. Hence, useful habits, carefully built up in the work of such courses, are almost certain to build themselves into the constitution of the boys and girls in such fashion that

they will continue to function when the work-life begins.

But what are some of the habits needed in the world of daily work? One of them, surely, is that of analyzing and planning the jobs to be done. I do not know of any more useful habit in all life. So few seem to have it! Think how priceless a gift you make to a youth when you lead him to form the habit of pausing, carefully to study every practical-arts project he faces, of deciding just how he will attack it, and of proceeding in his attack in an orderly manner. If you, as his teacher, so persistently hold him to that procedure, and so clearly show him its value that he not only makes it his *habitual* way of working, but he makes it an *ideal* of all his undertakings, then you have armed him as only the most successful men and women are equipped for life. The practical-arts courses in school are the ideal instruments with which to build up such habits. Then, there is the habit of readiness, of facing the task to be done without wavering and with a positive gesture. That is to say, the habit of taking the offensive in meeting a problem. Of course, the "academic subjects" can be used by good teachers to build this habit, but the very nature of the practical arts all but demands that it be developed. In athletics, boys and girls are taught special tactics for both defence and offense, but the efficient carrying through of a practical-arts project calls for initiative in attack throughout. Here, then, is an educative value of the first rank, which the practical-arts courses can easily provide if only the teacher is alert to his opportunities. It is the habit of readiness.

There is one other useful habit I should like to point out as one particularly appropriate to the practical arts; it is the habit of finishing whatever work of value one starts. Surely this is an important end of education. Merely to "keep busy until the bell rings," or to acquire "a fairly clear understanding of quadratic equations this semester" are not the most effective means of forming the clear-cut habit of always finishing every job one starts. If this really is a habit in the life of a boy or girl, he possesses something much more valuable than a legacy of many thousands of dollars. If practical-arts teachers will see clearly the educative possibilities in their teaching, they will be quick to discover this value in their courses. By an invariable insistence on their pupil's completing, at any cost, every project begun, and by constantly holding up the habit itself as an ideal, they can make a contribution to the education of their boys and girls which is of incalculable value. And I am of the opinion that there are no other school activities which so readily serve this purpose in education as do the practical-arts courses.

Attitudes, ideals, and purposes, as well as habits, come out of the shops, classrooms, and laboratories of the practical-arts subjects in our schools. By attitudes, I mean the manner of looking at the details of daily life, as well as the position one takes toward life as a whole. After all, the two things are inseparable, the one determining the other; and who can say which comes first? In any case, the shop teacher, or the practical-arts teacher of whatever kind, will have to deal chiefly with the attitudes his

pupils assume toward the details of daily experience. Here is a job to do. How do I *feel* about doing it? Can I attack it in the spirit of adventure? Or, is it just another task to be done? Now attitudes soon become habits, and the teachers of young people need to be much concerned with the building of desirable, habitual attitudes toward the work one has to do. What a wonderful prize comes to the youth who finds some day that somehow he has formed the habit of being intensely interested in anything he has to do. It interests him, perhaps, merely because he has to do it. Is it hard to do? That's great! Who gets a thrill from doing something that is not difficult? Is it very easy to do? That is fun! Is it not enjoyable just to dash off the easy jobs? Thus he finds the work of life a series of delightful experiences; not because of the character of the experiences, but because of his habitual attitudes toward his work. Now, one's innate, temperamental qualities seem to play a part in the attitudes one assumes, but training also plays no small part; and a careful teacher can help greatly in the development of habits of attitude. Of course, there are many other important attitudes involved in this process we call education. There are attitudes toward learning, toward those properly exercising authority over one, toward success, toward failure, toward right and wrong, toward superfluity and deprivation, and in a word, toward many-sided life. All these are important concerns of education, and to help children make into habits the desirable attitudes at all such points is to give something infinitely more important than the *facts* which teachers seem so anxious to teach. Now the disturbing aspect of this matter is that the acquisition of good attitudes does not result from merely holding recitations in the subject of attitudes, but it seems to result chiefly from unconscious imitation. Children in school quickly assume the attitude of driving themselves through an unpleasant duty when they are taught by a teacher who goes at his teaching in that spirit. And, an enthusiastic, live, interested teacher will soon find a whole class full of enthusiastic, live, interested youngsters. That is a strange thing about being a parent or a teacher. In the practical-arts courses the whole teaching situation is so obvious and clear-cut that this business of developing attitudes appears to be quite simple. It is really not an easy matter, but what a chance the practical-arts teacher has to build desirable habits of attitude! As he works, day by day, by the sides of his pupils while they engage in the amazingly stimulating work of creation and of learning about creation, how easy to say a word of encouragement here, keep silent there, throw out a startling question, give a skillful turn of the hand, tell a thrilling fact, and in it all express the very attitudes he would like to see assumed by his pupils. Of course, only those who are really fitted to teach can do this thing, but no others ought to be trying to teach. The practical-arts teacher can accomplish the most, only when his own attitudes are right.

Ideals and purposes that make for happy, useful lives, also have in the practical-arts courses a most favorable soil in which to grow. They will not necessarily take root and grow, how-

ever, unless carefully planted and assiduously cultivated by the teacher. The ideal of genuine honesty can be built upon the obvious necessity of honest work and truthful expression of ideas in construction projects as it is carried on in school shops and work-rooms. A distorted or dishonest expression of an idea of a beautiful table in a woodworking class, or of a well-planned meal in a home-making class obviously condemns itself. Likewise a true expression of a creative idea instantly establishes its own integrity without the aid of words or explanation. Hence, all that remains to start an ideal to growing in the mind of the young artist is tactfully to help him generalize the effect of his work, and to formulate the generalization into a moral goal or ideal. If frequent use is made of the opportunities offered in shop, drawing-room, and laboratory, to aid young people to perceive the moral complexion of their experiences, ideals of truth may presently be seen to be sprouting to a vigorous growth. Then, there are ideals of accuracy, of work, of perseverance, of beauty, of co-operation for useful ends, of economy of material, time and energy, of orderliness and of self-restraint, which may be cultivated in the practical-arts activities. These ideals will not just spring into full growth by some magical process unattended by any one. They may not even be planted, however rich the soil. But the fact that the practical-arts courses in the schools are concerned with designing and making useful objects which play a part in the lives of those making them, the fact that such designing and making are inherently and profoundly stimulating and interesting, and finally the fact that the moral qualities of such experiences are easily seen, make the situation a remarkably favorable one for the discerning, high-minded teacher to utilize in the cultivation of lofty ideals and life purposes.

Education is concerned with information of worth, with interpretations of life, with socially useful habits, and with the establishment of ideals and purposes which are socially desirable. Hence, the schools are engaged in an enterprise of too great importance to tolerate any activities which are not highly educative. Each phase of the school program should be carefully tested for its educative value, and if found wanting, it should be cast aside. The practical-arts activities of the schools seem to hold within them almost incalculable educative possibilities, but it rests with the teachers whether these possibilities are fully exploited, or are left to blind chance for their realization in the lives of the pupils.

SCHOOLS AND SCHOOL-LIFE IN SWITZERLAND

MARIE WIDMER

["I will lift up mine eyes unto the hills," sings the psalmist. Teachers need also to look afar at what others are doing and this description of education in Switzerland will bring help.]

THE intellectual and professional culture to which Switzerland owes the privileged position she occupies among the nations, is due chiefly to the thoroughness with which scholastic education is adapted to the requirements of modern life and conditions. Swiss culture is of long-standing origin and derived its inspiration from the most varied sources, notably from the great reformers and their predecessors, like the famous Irish monk St. Gallus, whose name is perpetuated in the abbey and town of St. Gall. In later days, Basle, Geneva and Zurich became great centres of learning based on a groundwork of classic lore which is the essential of all true culture.

Jean Jacques Rousseau, born in 1712 in the city of Geneva, presented the world with new ideas on education in his book "Emile." Heinrich Pestalozzi, Zurich's noted philanthropist and pedagogue, born in 1746, realized the greatness of Rousseau's teachings and utilized them in a practical way for the public schools. His writings and the educational establishments he directed at Neuhof-Birr (Argovie) and at Yverdon, on the lake of Neuchatel, became world famous. Pestalozzi's own methods were successfully employed by another eminent pedagogue, von Fellenberg, whose private Institute at Hofwil, near Berne, was attended by the sons of families known on both sides of the Atlantic.

As early as 1830 the Swiss cantonal governments began to study the school problems, for in those days already the school was recognized as the instrument by which a democracy trains its members for efficiency and patriotic service. The Elementary School, a cantonal institution subsidized by the government, is the basis of education in Switzerland. It is compulsory up to the age of 14, with the option of continuing to 16, and is entirely free of charge for all children.

"Continuation Schools" are available for young men who, for some reason or other, are only able to attend the prescribed compulsory term in the elementary grades. An intermission of one or two years is generally allowed between the termination of the first school period and the beginning of Continuation—or Repetition School, as this course is called in some parts of the country. In this manner the pupil resumes his studies at a somewhat more mature age. The new courses concentrate especially on the perfection of the mother tongue, on Swiss geography, history and government questions, and are an excellent preparatory means for the examination which every future soldier of the Swiss Army has to pass when he enters the school of recruits at the age

of 20. The attendance of these schools is limited to the winter months and does not exceed seven hours per week.

Pupils desirous of attending "Secondary Schools" are generally transferred from the fifth Primary grade, provided they can pass the state-imposed examinations. The average duration of a Secondary School course is four years, and after graduating from the same the students are ready to enter the so-called "Intermediate Schools," which comprise:

1. Institutions preparatory to universities, such as the gymnasia with their scientific, literary and commercial departments.
2. Teachers' Seminaries.
3. Technical Schools.
4. Commercial Schools.

The course of study in the first-named group of institutions generally covers four to four and a half years. After its completion and the passing of a state examination, the students are eligible to enter one of the Universities or the Federal Institute of Technology at Zurich.

Some Intermediate Schools, especially those of the smaller cantons, merely endeavor to give their students a complete education of a higher grade, and many of them afford at the same time opportunities for boarding to pupils from distant localities. A few of these institutes are enterprises of religious orders, and among them are the Roman Catholic Colleges at Schwyz, Einsiedeln, Engelberg, Disentis and Fribourg.

A noteworthy feature of the Intermediate Schools of French-speaking Switzerland are the language courses and the special classes for native and foreign students whose mother tongue is not French. After becoming sufficiently proficient in French in these classes the pupils are admitted to the normal classes.

The public Intermediate Schools generally require a moderate fee, but scholarships are available for deserving students.

Switzerland believes in showing her children their country. Hikes and sight-seeing trips of one or several days are consequently a regular feature of Swiss school-life. While the lower grades may be taken on half-day or day's outings, the higher institutions of learning provide for more extensive excursions, and in all cases the country's railways co-operate generously with their greatly reduced tariff for schools.

In most of the regions where skiing is possible in winter, this popular winter sport has become an important part of physical training, and many progressive towns have in recent years set aside a special credit for the purchase of skis for boys and girls attending the upper Elementary and Secondary grades. Gymnastics on skis, cross-country hikes, races, and even jumping contests have thus become a much enjoyed feature of Swiss school days in winter.

For children of frail constitution many cities have established open-air or forest schools. With specified periods of the day being devoted to study, resting and games, and with nourishing meals being served free of charge, these delicate children gradually develop into healthy members of humanity. School lunches and "Summer vacation homes for school children" are other vital problems efficiently taken care of throughout the land,

and donations from public-spirited citizens are never lacking when the welfare of youth is at stake.

Workers for Switzerland's outstanding industries, such as weaving, embroidery, machinery, watchmaking, hotelkeeping and woodcarving, are trained in schools especially devoted to these branches. A number of technical institutes for students of the age of 15 years up prepare the same for a theoretical and practical activity in construction, machine building, electrical engineering, chemistry, etc. The diploma given by these schools makes a student eligible for the Federal Institute of Technology at Zurich.

A small number of Agricultural and Dairy Schools, which all maintain model farms, afford a thorough training to the young men who desire to become proficient in this particular field. For the girls there are special schools for complete instruction in housekeeping. Courses are also available in dressmaking, millinery, embroidery and household economics.

Careful attention is also paid to commercial training. Besides the commercial sections maintained by the Intermediate Schools, there are special Commercial Schools at Geneva, Lausanne and Neuchatel. Commercial Science in its highest stage is taught at the Academy of Commerce at St. Gall, and in the Department for Commercial Science of the University of Zurich.

The newest creations in the field of vocational training are the schools for Traffic and Administration, where employees are trained for railroad, post, telegraph and customs service. Special institutes covering this field are moreover at St. Gall, Olten and Lucerne, and the technical schools of Bienne and Winterthur maintain each a railroad department.

There are also a number of Music Schools and Conservatories of eminent rank.

In addition to the before-mentioned Federal Institute of Technology at Zurich, there are seven cantonal Universities: i. e., at Basle, Berne, Fribourg, Geneva, Lausanne, Neuchatel and Zurich.

The various schools are under the direct control of the cantons and this ensures that cantonal requirements receive adequate consideration. The variation in language in different parts of the country also provides change of thought and mentality, so that Swiss schools, while all permeated with the spirit of modernity, offer the most attractive variety.

In the universities the students are taken to the highest level of modern progressive thought. Pure science is part of the university program. Dead languages are replaced by modern tongues, and more importance is paid to conversation than to mere literary and grammatical knowledge.

Switzerland is moreover justly famous for her excellent Private Boarding schools. These establishments are distributed throughout the country, but French-speaking Switzerland has the largest number of them. Parents of all nationalities entrust the care and education of their sons and daughters to these institutes, which very quickly become a second home to the young people. Even the Swiss families have long ago realized the unique advantage of sending their children for a year or two, or even longer, to a finishing school in a part of the coun-

try where the official language is different to their own.

And as there are Swiss hotels to cater to every purse, so are there private schools for students of limited or ample means. To impart to their pupils an education of irreproachable standard, in surroundings that are beneficial both to body and mind, is the foremost aim of these establishments. The development of character and intellect, as well as physical training through working in fields and woods, and wandering by lakes and mountains, is the particular aim of the so-called "Ecoles Nouvelles." Several "Alpine Institutes" for boys and girls have also been established in the mountain regions, where students of frail constitution may enjoy the benefit of the invigorating alpine climate throughout the year.

In Switzerland the schools are often described as "the palaces of democracy." Whether it be in an obscure mountain village, or in one of the leading cities, the "temple of education" is just as conspicuous for its beauty as the never-missing "temple of worship" is inspiring in its noble architecture. Where the physical and intellectual welfare of the young generation is concerned, the Swiss people do not shrink from making sacrifices, and so it frequently happens that a community whose general aspect totally lacks the stamp of prosperity prides itself upon a school building and equipments which must necessarily have occasioned heavily increased taxes to the citizens.

TELLING THE PUBLIC ABOUT ITS SCHOOLS

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[Recently, in a Massachusetts town meeting, a warrant that proposed an addition to the local high school was defeated nearly five to one. The only good thing that could be said for the present building was that the exterior is attractive. The publicity of that attractive exterior was more powerful than all that the school officials had presented regarding the needs of the children.]

THE schools, big business that they are, have only recently begun to avail themselves of the tremendous influence of intelligent publicity. Such publicity is needed, if only for the protection which it affords the school itself. An informed community guards its schools against attacks by ignorant, partisan critics.

People, too, are entitled to information about the institution for which they pay taxes annually. In publicity of this type there is no selfish motive; it simply tells what the schools are doing. Modern educational processes are becoming more specialized and technical, so that they need to be carefully explained to the public at large. Unless the public understands the purposes and sees the results achieved by the new professional procedures, it is likely to regard them as expensive fads and frills. Once these procedures are appreciated, there is opened up the opportunity for mutual growth in

aims and ideals of the school and the community.

Having obtained the goodwill of the public, the schools will have less difficulty in securing action when it is needed. In view of the vigorous competition for public attention and revenue, the schools need more than ever to use, not sporadically but constantly, whatever effective instruments there are to secure their just share of both for their own good and that of the communities which they serve.

Psychology comes definitely into publicity, for each bit of information may be made to appeal to curiosity, pride, competition, civic co-operation, gregariousness, suggestion, or imitation. Play up the human element as often as possible. The power of this appeal was evinced last winter when stories of the heroism of Bryan Untiedt during the Colorado snowstorm, leaped to the front page of hundreds of newspapers in the United States.

Effective school publicity considers the audience within the school as well as the various types of audiences outside the school, such as the professionally trained groups, the artisans, the unskilled laborers, and the audiences based on a connection with the school, as the parents, civic or other groups co-operating with the school, former patrons, and school voters.

The subjects of publicity include the value of good schools to society, the ideals set for the efficiency of each child, physically, morally, vocationally, avocationally, and as a citizen, and the machinery of the school. So that the public may comprehend the reasons for the changes constantly being made in the school system, it desires information about the need for adequate playgrounds, the efficiency of newer types of equipment, the modern course of study, the costs of education, why certain certificates are advisable for the teachers, why athletics and physical education should be taught, and why the schools are administered as they are.

To reflect desirably on the school, the facts must be presented in an attention-getting, attractive, yet dignified manner. The media available for publicity, though belonging to a few general classes, are as widely variant as the ingenuity of the individuals who supervise the campaign.

There are the newspapers, with their general news, display advertising, co-operative advertising by the school and local business firms or civic clubs, and editorial comment; the school publications, such as the handbook, the school paper, special bulletins, report cards, and annual report; the direct mail publicity in the form of letters to patrons and voters, and printed pamphlets; outdoor publicity, such as billboards, window cards, and school parades; school activities, including athletics, dramatics, banquets, and school clubs; exhibits in the town, county, and state; addresses by teachers to chambers of commerce and civic clubs, and radio talks; professional affiliation with civic clubs, the chamber of commerce, churches, and social organizations; slides and films shown at the theater; and such downright advertising specialties as calendars and blotters. Which will be selected depends on the size of the district, the number of different population groups, and the variety of group activities in the community.

Newspapers, school and local, are generally classed among the most efficient mediums of publicity. Co-operation between the local editor and the schools develops the local news service, gives the school a regular "direct wire" to its patrons, and advances the community as a whole by developing a desirable atmosphere of mutual helpfulness.

In the newspapers—in fact, in all types of printed or mimeographed publicity—use action pictures. Show the pupils in the midst of a project, in a scene from an operetta, or the home economics class preparing a meal. Action pictures tell a story. They have more meaning than the over-used posed pictures. Keep the school newspaper human. Make the front page attractive and orderly, with harmony in the type and headline display, and arrange the advertisements on the inside pages in a neat, preferably pyramid style. As a medium of instruction and in the same class with textbooks and laboratory materials, the board of education may justifiably make an allowance in the school budget for the newspaper. If possible, however, keep the project wholly self-supporting.

The superintendent's annual report to the board of education, commonly neglected in the smaller schools, may be made a booster for the school by introducing action pictures, graphic illustrations of enrollment and attendance, tables, and charts. Make the report, whether mimeographed or printed, not a monotonous series of solidly-printed pages, but an attention-getting and inviting publication.

The administrative bulletin, issued by the superintendent, presents administrative problems and other general information in compact and permanent form. This guide in routine matters, regulations, and policies of the school may take the form of a teachers' letter issued periodically; a more extensive printed bulletin issued monthly or quarterly; or a teachers' handbook, the most complete and most desirable of the types. These bulletins, enlivened with action pictures, tables and graphs, may well be made available to pupils, parents, and the general public, as a medium of interpreting the spirit, ideals and objectives of the school community.

The high school handbook, compiled by the pupils, is advisable in that it involves pupil participation in the formulation of school regulations. Typically the handbook contains explanations of the courses and credits; the school and its facilities; student activities; school practices and traditions; and songs and yells. Binding these books in the school colors makes them most attractive. They should be written in simple style, with expressive headings, so that even junior high school pupils can understand them, in a clear type, and on a wearable quality of paper.

Informed parents are less critical of the school. Any plan for fostering congenial patron and school relations should be completed, inasmuch as an unfinished undertaking leaves a poor impression of the school. The pre-opening letter, sent one to two weeks before the term begins, reaches parents when they are thinking about school details. It should be accompanied by bulletins, handbooks, the courses of study, and any other data which would explain school opportunities and duties of pupils and parents.

Capitalize upon the attention given to the report card by enclosing with it some brief letter of informational or inspirational nature. Make the enclosure fit inconspicuously with the report card. A series of monthly letters to patrons may cover a side range of subjects such as professional attitudes, modern trends, and special philosophies. Special letters may tell about the addition of a new department, or make an appeal for new uniforms for the glee club. In all these instances, the personal touch should be clearly apparent. Remember always, bits of information will invariably be considered more than lengthy letters of bulletins.

Particularly suitable for village or small school organizations, is the down town bulletin board. Trim it in the school colors; use illustrations and cartoons, preferably drawn by some of the pupils, and bits of information about some phase of the school work. Change the material at least once a week. The class in science or English may place a bulletin board near its room in the school building, and arrange it similarly. There may be, for instance, suggestions as to ways of adapting science to home needs.

School exhibits are valuable if presented in a new way and arranged so that the hardest work will attract its due share of attention from the showy yet less difficult type. Keep the pupils and their achievements in the foreground. Have them send personal invitations to the patrons. To insure a good attendance see that all the pupils take part. Well-trained pupils, handling their several parts with ease, and showing attention and courtesy to the older people will sell the school more quickly than any other publicity. Let the public participate by having an alumnus or prominent citizen give an address. Bits of curiosity, such as a loudspeaker connected with a concealed microphone or telephone transmitter through which some pupil announces the various exhibits and addresses the persons passing the speaker at the moment, attract attention.

Maintain the educational tone through action and color. School shops should be in operation. Present safety exhibits, such as the fire drill, the administration of artificial respiration, and the bandaging of wounds. Gymnasium exhibits in colorful costumes will advertise physical education as distinguished from the major sports.

Among the themes for the exhibits may be the history of the community, county, or state, depicted through relics of the several periods, showing the pupils using the spinning-wheel, grinding coffee, and knitting stockings, and having the ushers impersonating the Indians, early settlers, and pioneers. Another interesting theme is the contrast between past and present, showing perhaps school equipment then and now, school lunches then and now, or school procedures then and now. A special session of school is particularly enlightening to patrons.

Exhibits in some downtown store window—a highly effective yet easily arranged form of publicity—should be characterized by harmonious colors and by motion, both of which attract attention. Interpret the display in terms of community interest; for example, demonstrate principles of physics in ways that farmers may adopt.

In these exhibits may be suggested the history of the town, the contrast between school books then and now, a style show, or a topography map of the district. The possibilities are as unlimited as the ingenuity of the teachers and pupils.

Extra-curricular activities may be publicized through addresses given before local clubs, through the local radio station, when possible, and through the performances of the groups themselves. The school glee clubs, choral groups, orchestra, and bands, should be ever ready to help other community groups with their special programs. In addition they may present operattas, plays in connection with athletic events, participate in music contests, and broadcast programs. The department of dramatics may interpret its work by presenting short plays just before the scheduled meeting of the various town clubs or by evening entertainments. Advance ticket selling has its publicity value. For the physical education department good-will advertising may take the form of pamphlets explaining the true value and need for physical education; of talks given before clubs; of placards, posters, window displays of trophies and uniforms; and of press news, human interest stories, and pictures—for which this department is a prolific source.

To attract the rural students—since many of them stop after completing the eighth grade, arousing their interest in further education is obviously needed—the town school may have the rural eighth-grade pupils take part in commencement exercises with the city pupils. There may well be a Rural Schools' Day, during which rural pupils attend and participate in the recitations at the high school and are generally made to feel at home in the larger institutions. Printed and well-illustrated circulars may be sent to the rural patrons, to acquaint them with the high schools. On a Rally Day rural pupils of the three upper grades may compete with the town pupils in a scholastic contest and in athletic events. Copies of the town school paper may be sent, complimentary, to strategic rural schools in the school territory.

These many suggestions relative to publicity only point the way to countless others. The keynote of the entire publicity program is not a negative one—do not do this or that—but a positive one. It calls for not merely the avoidance of undesirable procedures, but for the execution of the desirable measures. It involves the actual and constant accomplishment of projects which will enable the community to understand and appreciate the values which are being returned to it for the funds which it expends on education.

MILLIONS OR MEN?

S. O. Bond
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[President Bond feels that he prefers to specialize in making men. After reading his article most teachers will agree with him.]

WHICH is better: to specialize in making millions or in making men? Today I visited a millionaire's office. We had both been born in humble homes, alike obscure, and separated by a few miles only. Early in life he began to specialize in making money; I, in making men. We both studied hard and worked overtime on the problems of our art.

Our methods were not so very different. He allied himself with some millionaire business men and devotedly served them, putting all he could earn into the business. He studied their methods of making and saving money. He made friends among those who could help him most. He was soon directing a small group of men whose business it was to make his plans succeed. The small group became larger and soon the annual income of thousands became tens of thousands and then hundreds of thousands. It all seems quite simple and quite natural —the hard-working employee of yesterday a millionaire employer of today. Of course all cases do not work out thus, but this one did and many do.

My experience was not so very different. I decided early to devote myself to making men. I began by teaching in a rural school at thirty-two dollars per month. I turned all I could make back into the business for the next twenty-three years. During that time I graduated from an academy, a private college, a state university, and an internationally known university. During these years of teaching and schooling I was associated with men universally acknowledged as the most skilled in the making of men. The personal touch of these teachers gave me an opportunity to study with great care their methods. I put these methods into use with, of course, the variations necessitated by the personal equation. Graded school principalship grew naturally into high school principalship, which was succeeded by normal school presidency, and later by college presidency. This, too, represents the natural and rather simple procedure.

Some of the results are not so different. The millionaire has a few thousand thousands in carefully chosen securities and investments that are continuing the work which he started. I, too, have a few thousand young people who chanced to come my way and who are continuing in a larger and better way the work which I started.

In a few important particulars, however, my millionaire friend and I are quite different. In the first place, he lives in a mansion on an exclusive street in a great city. Rich draperies hang over the windows, Persian rugs, that combine the efforts of an entire

family for years to complete, cover the floors. Antiques have been brought from the ends of the earth to adorn the rooms of his home. The slightest additions to the comforts of this home have all been attended to. The lawn, through which run the graceful, winding walkways, is carefully covered with its heavy coat of green, with here and there decorative flower-beds and shrubbery. The most beautiful in nature has been refined by the most skilled artists in beautifying the surroundings of this home. Liveried servants open and close the doors, serve the meals, entertain the children, and answer the phone calls, asking the master whether they shall say he is in or out. A five thousand dollar Lincoln, with a private chauffeur awaits the pleasure of any member of this household. It requires the bravery of a Leonidas and the cunning of a detective to secure entrance to this home, no matter how urgent the need.

The offices of this millionaire occupy a spacious suite of rooms in a skyscraper, which has his name cut in the marble just above the entrance. The outer room of the office suite is occupied by a thick-headed office boy and a trim, keen-eyed telephone girl. This dull boy is supposed to ask the callers a number of embarrassing, but pointed questions, the answers to which give the cue to the bright-eyed girl. If these answers indicate another opportunity to multiply the wealth of her lord, she suddenly interrupts the conversation. Her winsome smile and captivating voice sweep away even from memory the clumsy questions of the youth. She asks the caller to be seated with a, "May I ask who is calling on Mr. A?" She disappears for a moment and returns saying, "Mr. A wishes you to come into his private office where you may visit without interruption." If, however, the replies to the boy seem to indicate to this keen-eyed girl that the mission of the visitor is to explain some cause of mercy to one who might be induced to help, she continues to manipulate false keys or carry on an imaginary long-distance conversation with herself. The caller is then left to the mercy of the thick-skulled boy. If one is persistent enough, he may, after agonizing delays, get an audience with one of the confident secretaries. This gentleman nervously listens to the carefully prepared appeal and says that he will speak for Mr. A, as he knows what that estimable gentleman would say under the circumstances. "I know Mr. A would be delighted to help this worthy cause if wealthy men were not so hard hit by these pressing times. If oil would advance about a dollar on the barrel, or if railroad stock would declare an additional dividend, or if the government would release them from income taxes, Mr. A would be delighted to double the subscription you ask. As matters now stand, however, it is utterly impossible for him to do anything. It would be a waste of your time and of his to talk this matter over, and besides, this is one of his busy days."

I recently had the experience of one of these attempted interviews. I traveled several hundred miles to get the courtesy of a twenty-minute hearing. After thirty-six hours of the most exasperating efforts to call this gentleman by telephone, both at his residence and at his office, and after repeated personal calls at his office, I

finally reached the private secretary, who heard my cause but who literally barred the door, which already said in large letters, POSTIVELY PRIVATE.

Well, perhaps it was better so, for I am sure I would not be writing this account had the result been different. The experience has helped me to take stock.

I have already said that my millionaire friend and I are different in certain important particulars. He lives in a mansion, but I would not have you understand that I live in a hovel. It is true that I might possibly, in my own name, own a humble cottage, but it happens that I pay rent instead, since a school teacher often finds it advisable to move to a different locality. The furnishings of my home are so simple as to arouse envy and jealousy in no one. The lawn is grown up somewhat to weeds, but with the funds at hand the only possible caretaker chooses to spend his time in keeping the weeds out of the life of some boy who has lately departed from the parental doorstep to explore the unknown fields of the big world. The winding walks are but the crooked paths made by many callers who seek counsel on all subjects, from matrimony and C-minuses among the students to the correct wording of a will by which a widowed donor would give the residue of her estate of four hundred and fifty dollars to the college after her funeral expenses are paid.

The car that stands at the front door is not a Lincoln, but it is made by the same motor company. No well-groomed chauffeur opens and closes the door, but a strong crank in front provides some much needed exercise to those who find occasionally an opportunity to combine a pleasure trip with a long-needed call on a friend whose son has been given too much money to spend on his education.

The only servant in the house is a wife who finds time to smooth out many a tangled thread in the character of those who call when the president is out. Her days, too, are usually about sixteen hours long, but the home duties seem less strenuous when some girl says, "I was ready to give it all up and go back to my old job, when you showed me my mistake." Or another says, "I really did not see the danger of it until you told me." These little expressions of appreciation do much to shorten the long day or brighten the dark one.

My office is not different in many respects from my home. Its doors are always open to the most trifling student who shows signs of doing better or a desire to get at the seat of his difficulty. A constant stream passes through day after day. Each one is given enough time to get some light upon his particular problem. Meal time is frequently delayed or abridged for the privilege of helping someone who is in serious need.

The mail represents thousands of companies and individuals wanting us to select the brightest and keenest minds in the group for certain special business or social service. It requires time and energy to do this, but it often means a life opportunity for some promising young man or young woman. The one unpleasant bit of mail is that which contains statements and duns for long over-due bills with an entirely depleted treasury. Many companies are more than generous, adding even after many months of

statements, a simple "please" or "can you help a little?" Other companies are run on a purely business basis and quickly notify the college officials that payment must be made at once or the account will be put into the hands of an attorney for collection. It requires much planning and much praying to find the way out. Occasionally it can not be found. Then the treasurer, the president, or some member of the board of directors underwrites a note to save worse embarrassment. Such letters, however, are made more tolerable by the many brief messages of love and commendation for services rendered.

But I would not censure my millionaire friend strongly, because I might not have been different from him had I earlier set my stakes to win a fortune. He has doubtless done it honorably and should feel a just pride in his accomplishments. I do wish, however, that he could feel for one brief hour the need of a great institution such as I serve. I wish that he could really catch the spirit of service through philanthropy, and appreciate, even though it be for a moment, the joy of giving as compared with that of getting. Perhaps some day he will take a little time to think, and the vision will come.

TOURIST TEACHERS

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[If it were not for "Tourist Teachers" the teachers' agency would go out of business for lack of patronage. That teachers have found it to be of professional as well as financial advantage to be "tourists," can be verified in almost any school faculty.]

I WAS rudely awakened from the reverie into which I had fallen during a graduate course, which I had taken as a "refresher," by the voice of the professor, who, in the midst of the comments he was making anent the small proportion of teachers who are a fixture in their profession, made the arresting statement that we have come to an age of "tourist teachers." I became instantly wide awake, not merely because of the fact that the idea advanced was a novel one, but also because my conscience reminded me that perhaps I too might be considered a "tourist teacher."

It was at first my belief that the instructor was referring to the swarm of teachers who, under the new, liberal concessions with regard to leaves of absence which obtain in some cities, and the still more prevalent emphasis upon travel as an open sesame to higher pay, have availed themselves of "the gangplank to Europe." These teachers were not too proud to patronize the well-advertised 'tourist third" for the very excellent reason that their savings would seldom cover a first-class passage. I suppose their objectives could, by a little juggling, be catalogued under the seven cardinal principles, because some were truly in search of a rest and hence their objective was "health"; the foreign language teachers were often in search

of a command of 'fundamental processes" (at least as far as they are concerned), those who were touring the museums and cathedrals might be considered as having an objective in line with "ethical and religious" improvement; all of them we trust had in common the 'worthy use of leisure time"; the being a foreigner for the first time might well be a lesson in citizenship for many; the desire to add to their next year's salary would be vocational training; and I rather suspect that the absence of some of the teachers from their native land might result in "more worthy home membership."

What these teachers brought back with them is open to discussion. Some of them returned overflowing with new ideas and renewed inspiration. Some came back with a trunk plastered over with gaudily colored labels and a plausible argument for increased pay.

There is still another type of tourist teacher. If he were not enrolled in one of the noblest of professions, he might well run the risk, during the summer at least, of being classed as a vagrant, since many of us at that season of the year are "without visible means of support." This type of tourist teacher is the one who uses his profession as a means of "seeing the country." He teaches for a year or two in one town or state, and after he has observed the geography and the mysteries of the salary schedule of that particular town or state, decides that he must needs see more territory and moves on to greener (?) pastures.

In other days it was often extremely difficult for a teacher to move about as easily as he can do today. The tendency to choose teachers from the home district was too strong to permit any but the administrator to change from state to state with any degree of ease. Today conditions are different. The World War, during which the War Department seemed to follow the policy of stationing Western boys in the East, and sending Eastern boys to the South and West for training, encouraged traveling. The younger generation who had missed "the big parade," noting the absence of provincialism in the men who had been 'across," decided in their heart of hearts that when their time came, they too would "see the world."

In a particular institution of high school grade with which I am familiar, there were some twenty-five regular teachers. Among them they had visited all the principal countries of the world. One man had taught in Florida, California and Hawaii. Two had taught in Chili and one in Bolivia. Some of them had taught in at least three states of the union, and many of them had been in over three-fourths of the states. One had taught in England and one in Ireland. Many had been in France and Germany.

In an institution of college grade not very far from the one mentioned in my preceding paragraph, the faculty had either studied or taught in at least 28 states, France, Germany, Switzerland, Dutch West Indies, Mexico and the Philippines. Eight or more on the faculty mentioned travel in Europe.

Granted that these are unusual cases, they are still significant, even though the trend is more noticeable in the western states and in the higher institutions. There are an increasing

number in the profession who are becoming travel-minded. Whether this be merely to attend an occasional meeting of the N. E. A. which is held at the other end of the continent, as in Los Angeles, or for the purpose of acquiring training which it is presumed can better be obtained at a distance, or for the broadening influence of travel, teachers are increasingly spending more and more time in traveling.

Is their travel getting them anywhere? The old adage says that "a rolling stone gathers no moss," and it is true that constant traveling about is not conducive to the acquisition of a bank-roll. But then neither is any form of teaching, as a rule. Someone has said that "the rolling stone acquires a beautiful polish," and it is not to be denied that this is one of the concomitant advantages of the tourist teacher which is most worthwhile, not only to the teacher but to the communities with which he or she comes into contact.

The tourist teacher is not by any means largely an unsuccessful one, since no teacher can last long in this day of competition unless she is at least "better than average," and that "average" is constantly becoming a higher mark to aim at. Besides, the custom of many states in putting up certificate barriers to stem the influx of out-of-state teachers tends to encourage the hegira of the better-prepared teachers only.

The era of the tourist teacher not only means that a teacher need no longed be the "cribb'd, cabined and confined" individual that he is in some communities (like my two friends in an Eastern city of some 60,000 inhabitants, who were warned by their superior that they had better "refrain from bowling, for it is a low vice"). The teacher who is face to face with intolerable narrowness can exert his influence for the year which is accorded him toward the liberalization of the community through the one element which is capable of noticeable change—Youth; and he has today the opportunity of moving on until he finds the community where he can do his work amidst congenial surroundings. This need not always be an expensive or an extensive trek. A move of less than a half-dozen miles once changed the atmosphere surrounding me from one where the teacher's position was equal to that of a "hired servant" to one where the door of every home was thrown open to "my boy's best friend."

If, however, happiness is not to be found in the same state, this country of ours is so wide that every form of climate may be found within the limits of our states or territories. As a result of this interstate migration of teachers, little by little the leaven is permeating the whole lump. Since it has been shown that only the better-prepared teacher can travel widely, progressive standards are b e i n g brought from one state to another and from one school to another, until the "tourist teacher" has come to be not largely a disappointed or disoriented individual, but a progressive and liberalizing element, and the tourist ranks are increasingly being augmented with those who are not merely tourist teachers annually or semi-annually, but by those who are traveling not only during the summer as stu-

dents, but as exchange members of summer school faculties, or during the school year on leaves of absence as demonstration teachers of new methods, or lecturers on new movements in education, as members of the ever-increasing band of educational missionaries who are the shining heralds of the new dawn of educational democracy and liberalization.

INCULCATING RESPECT FOR LAW IN THE SCHOOLS

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[Dr. Chambers believes that most boys and girls are naturally decent, and as a teacher of the social sciences he can utilize his time to better advantage than to attempt to inculcate respect for law merely because it is law.]

MUCH ado is being made about the supposed need of indoctrinating school pupils with what are vaguely called "desirable civic attitudes." William Chandler Bagley devotes a recent collection of papers to the thesis that the relatively high ratio of crime in this country must be reduced by properly instilling into the school children the attitude of respect for law.[1] He uses the phrase "respect for law as such." Many lesser writers and speakers, not as skillful in tempering language, have demanded "a respect for law because it is law."

Now the concept of law in general, as distinguished from the concept of a specific law, is that of *order*. The necessity and essential respectability of a reasonable degree of order no one will deny. But the existence of order demands some sacrifice of individual freedom, some restraint of personal conduct, and some cramping of human expression. This is regrettable, but it is an inseparable concomitant of law and order. It is perfectly clear, however, that there may be too much law, amounting to a needless, unjustifiable, and intolerable suppression of liberty. Ignoring this important reservation, our educational moralists struggle to inculcate respect for law merely *because it is law*.

The ideal of freedom, at the present stage in human evolution, is probably at least equally as respectable as that of order. It would seem equally sensible to demand an attitude of respect for freedom because it is freedom. Perhaps a long list of equally desirable attitudes could be made. They would overlap and conflict in a manner to bring consternation to an observer afflicted with a sense of logic, but that is a small matter. "Desirable attitudes" must be "ingrained" into our hapless boys and girls, apparently upon the assumption that they are not only conscienceless, but utterly lacking in native sense. Now what is the difference between an "ingrained attitude" and a prejudice? If there is any difference, I must confess my inability to detect it. And prejudices are just the things which are most

1 "Education, Crime, and Social Progress." The Macmillan Co., 1930.

likely to defeat intellectual progress and retard the advance of civilization.

If the only certainty in this world is change, then the only attitude worthy of impression is the attitude of the open mind, of free inquiry—the attitude of intellectual curiosity, honesty, and independence. I would not be misunderstood as deriding respect for law and order; but there have been times and places in the world's history when an ingrained adherence to that idea amounted to no less than stupid servility, fully as deserving of contempt as is reckless infraction of respectable laws. The body of the law changes constantly, and the change is necessarily accompanied by some stress and strain. Nullification of foolish or oppressive particular laws has been a phenomena continually observable in American history, and is as much a matter for felicitation as for lament. Without it one shudders to think what might have happened to the American people, with their well-known penchant for law-making.

Grant the inevitability of change, and it at once becomes clear that if you instill any "attitude" or prejudice other than a prediliction for open-mindedness, you prepare for the child a bitter disillusionment as soon as the pendulum of history has so swung as to make that attitude a liability instead of an asset. The "desirable civic attitudes" of the educational moralists are presumed to be numerous and specific, and to be known letter-perfect by all substantial business men and all properly tractable school-marms; but strangely enough they have failed to penetrate the obtuse consciousness of the real scholars in the social sciences. Charles A. Beard has lucidly expressed "the fiction of majority rule." William B. Munroe has mercilessly lampooned "the simple expedient of bawling at the people to come out and vote." The attempt to inculcate a docile acceptance of such threadbare mental furniture is a standing joke among reputable scholars, and an old chestnut to pupils of average intelligence. It amounts either to a disclosure of incompetence or a denial of intellectual integrity.

Unduly alarmed at the statistics of crime, which after all is but a small wart on the face of American civilization, Bagley and others insist that the schools assume responsibility for the condition, and mold their whole program toward the aim of reducing crime. This amounts to asking the schools virtually to ignore the real problem of social progress. The sum-total of social injustice which is within the law and therefore not classifiable as crime, is probably many times greater than what is involved in the statistics of criminal offenses. The human misery resulting from the imperfections of our economic order is staggering in total. The suffering and loss traceable to ignorance of hygiene and sanitation is frightful. The number of persons who are more or less under the dark thralldom of superstition is appalling.

The worst enemy of progress is not crime, but complacent ignorance. The great American weakness is the willingness to take one's opinions ready-made from the commercialized press, the movies, the radio or the copy-book, and to cling to them stubbornly without knowing why. This is the real

stumbling-block to social progress. Crime is only a small lateral sector of the problem, greatly overplayed in the newspapers, the theatre, and the pulpit.

Taking a conviction of the inherent depravity of the human race as a starting-point, it is but an easy step to the necessity of indoctrinating all young people with 'right attitudes." But take, as I do, the premise that most boys and girls are naturally decent until they are spoiled or embittered or driven to cynicism by an unjust and hypocritical and smug and apathetic adult world, and you will have less confidence that you have a monopoly on "right attitudes" yourself. As I daily look into the frank eyes and alert faces of my college students, and observe the independent and self-reliant, yet withal wholly reasonable and respectful attitudes that seem perfectly natural to most of them, I am inclined to pin my faith in their integrity, and feel no urge to indoctrinate them with the cut-and-dried mind-sets which are proferred as panaceas by the prophets of social retrogression.

SOME PROBLEMS IN CURRICULUM-MAKING

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[Dr. Tubbs shows that there are far more problems than answers. There are still high schools, however, that require every freshman enrolled to study Algebra, Latin, Ancient History, and English.]

THE great problems in the field of curriculum-making are the problems of society itself. The schools are mere instruments through which society is developing its future citizenship. William Von Humboldt once said: "Whatever we wish to see introduced into the life of a nation must first be introduced into its schools."

The curriculum-maker must always be sensitive to the ever-changing social trends of the times. He must know the direction in which society is moving. For these reasons he must devote a great deal of his time and thought to the aims and objectives of education. He must be familiar with the various phases of educational philosophy. He must be an interpreter of "the good life."

Every nation must decide the ends or objectives that are to be achieved by its schools. There is a good deal of variation among the different countries of the world as to what constitutes the ideal citizen. The Junkers, before the war, were very strongly of the opinion that the ideal German citizen should be obedient to authority and efficient in his daily tasks. A program of studies was worked out in detail that gave direction to all education activities in the German schools. The English people also have very definite ideas as to the qualities that should inhere in a good Briton, although many observers of English life say that in England there is a total lack of system in the matter of citizen-

ship training. This is not true. Although it may not be apparent in a very real sense of the term, there is a definite philosophy that is employed in the education of English youth. Mussolini of Italy depends upon the work of the schools thoroughly to indoctrinate Italian children with the principles and ideals of Fascism. Likewise, in Russia the Communists are very definitely training Russian youth in the philosophy of Communism through the instrumentality of the schools. Among the Duck-Ducks, one of the higher tribes of primitive Indians, a very definite program is followed in initiating the youth of the tribe into the duties and responsibilities of adult life. The period covered by the initiation is rather short. They are taken up into a high mountain where they are literally starved for a period of two weeks. After this they are subjected to a number of very vivid experiences that include beatings, maulings and bodily lacerations. These are accompanied with lessons in the proper respect for authority, self-sacrifice, and the number of other qualities that the tribe deems of great importance in preserving the ideals of the tribe and also its very existence. In other words, each nationality decides its own mores. In order that this may be maintained, it is of the utmost importance that a systematic procedure be followed in teaching the youth the ideals that the group has set up for itself.

In our own country a great deal of training of children is left to the home, but in many respects the state insists that the individual owes to it certain duties which must be performed; otherwise, the state could not continue to function. This applies particularly to the conditions at the present time, as human society becomes more and more complicated. The general tendency is for the State and Federal governments to become more and more centralized. In our own country the Federal government had little to say in the way of directing the trends of education and the policies by which these are to be determined, but in many of the states there are many laws on the statute books that prescribe very specifically that certain things shall be taught in the schools. The more progressive school systems are usually at least a generation in advance of state legislation. Perhaps there is a certain service that is rendered through legislation, for the that they impose certain obligations of an educational nature upon backward communities that must be met. If educational policies in these communities are to be left entirely to public opinion, little progress would be made. In this respect, legislation requiring the teaching of certain subjects in the schools is of real benefit.

When the general aims of education have met with common acceptance, the next process is the selection of specific material by means of which the objectives are to be realized. To the person who has not had considerable experience in education, this would seem a rather easy thing to accomplish. In reality, however, it is an exceedingly difficult task. There is involved in this whole matter a good many difficult points. In the first place, the material which is selected must be significant. It is not easy to determine just what material is important and what material is relatively unimpor-

tant. After the material itself has been decided upon, another important point that arises immediately is that of grade placement. It would seem that after all these years of educational effort, that this latter question would have been at least fairly well answered. Such, however, is not the case. Let us take, for example, the subject of arithmetic. Mathematics is the most fixed of all the sciences and yet there is very little in the way of scientific investigation carried on in this field in the matter of grade placement.

During the last few years a committee of principals and teachers in northern Illinois has been working on the problem of the placement of various arithmetical processes in the grades. For example, they are attempting to determine by scientific procedures where such operations as common fractions, long division, percentage, etc., can best be taught. This is the most outstanding study that has been made in the United States up to the present time in arithmetic. It almost goes without saying that in the field of the content subjects, practically nothing at all has been done in this direction. Here is a great opportunity for people who are interested in the problem of curricula construction to make a large number of very worth-while contributions to educational science.

The necessity will always exist in every progressive school system for constant curriculum revision. In addition to this phase of the work, is an unlimited field of research which is a very important aspect of the work incident to curriculum construction. Briefly, the activities in research should include:

1. A scientific determination of the aims of education in a democracy with particular reference to the United States.

2. The relative values of the different subjects that are taught in our schools.

3. To determine the content of our courses of study. This content must be definitely related to the aim set up for the subject. This is a fertile field for extensive experimental research.

4. After the materials for our courses of study have been selected, a great deal of research must be done to determine the proper sequence in which this material should be organized for teaching purposes.

5. Problems of method are part and parcel of the work of curriculum construction. There is a vast field for scientific experimentation in determining how the content of our courses of study can best be taught in order that the highest results may be obtained.

6. Careful analyses must be made of the outcomes of our school work and classified into direct and indirect in relation to the aims of the subject. Analyses must be made to the units of content. Almost no experimental work has been done in this field.

7. Much remains to be done in the way of adapting our courses of study materials to the individual differences to be found among boys and girls on the various grade levels. The fact that individual pupils vary greatly in every group has not been given the thought and consideration which its importance demands. Our procedures are very largely the result of pedagogical theory.

8. Research is needed for discovering the most effective type of organiza-

tion for producing usable courses of study.

9. Careful study must be made of the problems of introducing teachers to, and acquainting them with, the materials of our courses of study. This is necessary if the courses of study which are published are to be used widely in our schools.

10. There is a great need for experimental work to determine whether new and revised courses of study actually produce more satisfactory results than the old materials and methods which they displace. Unless it can be shown that a new course of study is an improvement upon the practice that has obtained in the past, there can be little justification for continuing this kind of work.

The work in curriculum construction in the Chicago schools is well under way. It should be regarded as a continual process. In a dynamic and ever-changing society, a course of study is, in a sense, out of date as soon as it appears in print. This statement is very well illustrated by an article that was written a short time ago by Norman Bel Geddes, which appeared in the January 1931 issue of the "Ladies' Home Journal." The title of the article was "Ten Years From Now." He describes many changes that will take place in the next decade.

That many of the items enumerated by Mr. Bel Geddes will be actualities within a few short years there can be no doubt. The tempo of present-day life has been speeded up to a terrific pace. Only a few months ago the airplane speed record was 250 miles per hour. Today it is 408 miles per hour. Likewise the altitude record was recently extended into the stratosphere to a distance of 52,000 feet.

Changes are taking place in other lines of activity fully as momentous as in the field of aviation. Verily no one knows what a day may bring forth. Whether we will it or not, we are inexorably carried on by the trend of events. It is of paramount importance that we adjust ourselves quickly and intelligently to the new conditions and imperative demands which these changes impose upon us.

The purpose of curriculum-making everywhere is to keep the schools sensitive to the demands of a highly complex civilization. This will require clear thinking, sound judgment, and unfailing persistence on the part of those who are charged with this responsible work. As a social organism we cannot stand still. New adjustments must be made to meet every new development that affects human kind, irrespective of geographical foci and ethnological distinctions. Whether we will it or not, the time has passed when any nation can live unto itself, unaffected by the train of world events. The laws of economics are inexorable. The dictates of humanity clearly point to a new era in international relationships. In the light of this broader concept of man's duty to man, we must work our way, perhaps painfully and tortuously, toward the effulgence of a new day. A day that will be more glorious than humanity has ever known before in any period of its past history. To this end, all of our best efforts and loftiest aspirations must be directed in order that the lives of our boys and girls may be all the more enriched.

PUPIL KNOWLEDGE OF STUDY TECHNIQUES

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PROBLEM:

Are pupils in the public schools learning how to study effectively?

If students are learning helpful facts about study and are becoming skillful in the practice of study, then the problem is already solved.

If students are not learning the facts and skills needed in study, it should be brought to the attention of our teachers. Our rather incidental attention to the study problem should then be replaced by definite plans and procedures.

Procedure:

First, a multiple choice test of 33 questions was given to 837 students in grades 7 to 12. This should give some measure of pupils' growth in knowledge of proper study procedure as they progress from grade 7 to 12.

Second, during the next two months the teachers were given some direction in teaching a few lessons on the principle of effective study. The time spent in such teaching averaged about 90 minutes.

Third, at the end of the two-month period the test was given again, *to measure the effect of the teaching.*

The difference between the median number (13.8) of questions answered correctly in grade twelve, and the median number of questions (11.8) answered correctly in grade seven, was 4.8 questions. For a period of five years in school, this is a very small gain in knowledge of effective study techniques.

Data:

Table I

First Test Given in November, 1930

Median Score of Number of Questions Right of 33 Questions in the Test

Grade	*Median No. Questions Answered*	*Gain in No. Questions*	*No. Pupils*
7	11.0	..	126
8	11.2	0.2	234
9	13.1	1.9	219
10	15.6	2.5	90
11	15.1	0.5	83
12	15.8	0.2	85
	Total Number Pupils, 837		

There is a selection of pupils as they progress from grades 7 to 12. This selection of pupils could easily account for this small gain of 4.8 questions.

Table II

Second Test Given in January, 1931, After a Small Amount of Direct Study Techniques

Comparison of First and Second Test Scores

Grade	*No. Questions Answered*		
	1st Test	*2nd Test*	*Gain*
7	11.0	13.6	2.6
8	11.2	15.3	4.1
9	13.1	16.3	3.2
10	15.6	17.1	1.5
11	15.1	16.8	1.7
12	15.8	19.7	3.9
	Average gain for all grades, 2.8 questions		

The direct teaching of study techniques resulted in some measurable gain in each grade. The average gain for two months in grade eight was 4.1 questions. This was almost as large a gain as was made in the same schools in five years. There was no pupil selection to effect this gain for the two months, as there had been for the five-year gain. The average gain of 2.8 questions for all grades in the two-month period was more than one-half the average gain for the five years. Here again it must be remembered that there was no pupil selection to effect the two-month gain. Some schools made gains as large as 12 and 15 questions. The teachers did not have the test questions and hence could not teach them directly. The average time set apart in each school for this direct teaching was approximately 90 minutes. In some of the schools, study procedures were emphasized with lesson assignments.

The outcomes indicate that a small amount of time spent in direct teaching of study techniques is effective.

The test was then given to 32 college seniors who were preparing to teach, and to 23 teachers in public schools. The results of this test are shown in Table III.

TABLE III

Scores in No. Questions Answered by College Students and by Public Schools Teachers

No. College Students, 32.	
	Median Score, 18.6
No. Public School Teachers, 23.	
	Median Score, 21.6

A discussion of these test questions both with the college students and with the public school teachers, gave further evidence that both groups had limited knowledge of proper study procedures. It was also agreed by both groups that each question in the test was a valid test of study procedures.

Conclusions:

Students in our public schools are not learning facts about proper study technique as they progress from grade 7 to grade 12.

Students can effectively be taught about such techniques.

Those who did the teaching report that the students were very much interested in the problem of study.

Teachers and college students do not score high enough on this test to be effective teachers of the study techniques.

Reference Material, from which the testing material was selected:

1. Crawford, Claude C.—*The Technique of Study,* Houghton Mifflin Co.

2. Book, William F.—*Learning How to Study and Work Effectively.* Ginn and Co.

3. Yoakam, Gerald A.—*Reading and Study.* In particular, Ch. 12, 13, 14, 15. Macmillan Co.

4. Whipple, Guy M.—*How to Study Effectively.* Public School Publishing Co.

5. Starch, Daniel—*Educational Psychology,* Ch. 12. Revised Edition. Macmillan Co.

6. Johnson, H. R.—*The Preparation of My Lessons.* The Bruce Publishing Co.

7. Pear, T. H.—*The Art of Study.* E. P. Dutton & Co., Inc.

ON TRYING THINGS OUT IN CLASS

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["I should try things out in class....and while I was doing it....I should be guided in a large part by their smiles." To which most of us can subscribe with a hearty "Amen."]

WHENEVER I read in an advertisement, "This has been tried out in class," I wonder. Such useless and even dangerous things have been tried out in class. If the investigation was mechanical, it may not be completely reliable; there needs to be understanding and intelligent appreciation of the students' likes and needs, and always human interpretation of all data.

Exercises which have done more harm than good, have not only been tried out but have persisted in text after text and have been recited upon from one corner of this country to the opposite diagonal corner until they have become an embarrassment to our generation. For example, there are exercises in repeating, "It is I, it is she, it is he,—" all down a third of a page. Now no one said those things outside of class—at least in our straight-speaking West—no one but a prude. "If there had been exercises on, "It is I who should say 'Thank you,'" and "I am sure it is not he who is to blame," that might have taught us something we could use without getting all stiff inside. What the exercises that were given did was to train some people now grown to say, "Won't you ride in this car with my wife and I?" And it has bred the feeling that *I* is more refined and altogether a nicer word for company than *me*. *Me* is a vulgar mistake, because in the exercises the trick was to say *I* when it did not sound like human talk. The exercise has kept the grammar teachers in work, if that is what they wanted, because now the thing to do is to train the children to say *me*. Let us not educate a generation to think *me* is the nice word, so that in a few years we shall have to go back to the *I* drills. Let us teach the principles until the children understand them and can put them into practice coming and going. But the point here is that because the "It is *I*" drills were ground through so many classes is no sign they were any good.

Children have learned to say what is expected in class. A few months ago I went through the exercises, "With whom are you going?" and so on and so on, with a room full of sober faces. Finally I said, "Would you really say that?" "It is correct," the children answered. "We learn this for the examinations, and we might need it in the English class next year."

Children obey the conventions because that is the easiest way to get along. When I was seven years old, the leader of our Little Busy Bees, a missionary club, said that the next Sunday afternoon, it being near Thanksgiving, we would each tell what we were most thankful for. All week I enjoyed rehearsing my report. I would tell how thankful I was for

my legs. The leader would smile and I would go on to deliver what seems to me now a beautiful essay or poem on the joy of having legs.

The next Sunday the first little girl in the circle of Busy Bees said, "I am thankful that Jesus lived."

The leader smiled at her as I had imagined in my private rehearsals that she would smile on me, and then she elaborated on the little girl's choice of a thankfulness.

The next little girl said, "I think we should be thankful that God sends missionaries to China to tell the boys and girls there about Jesus."

As the confessions of thankfulness came nearer and nearer to me around the circle, my dear legs grew weak, and I knew I could not say what I had planned. When the leader called upon me, I said, "I think we should be thankful that Jesus lived."

There was no smile for me. The leader said I should have been thinking for myself and not merely repeat what others had said. It was far better though, I knew, to have the reproach than to have said out loud in that little circle, "I am thankful for my legs."

It is impossible to be sure of anything by trying it out in class, and yet I know it is very important to try things out in class. The time came when I was the smiling, reproaching teacher of a college class. One day, as the students were reciting on the vocabulary chapter and muttering over five, six, or four methods of increasing their vocabulary, the stupidity of it struck into my spirit the zeal of reformers. I made a vow that never again would I teach a lesson on vocabulary that was mere theory. I would think out a way to help students do something about it.

My zeal carried me to devise what I thought was a system of working with words in such a concrete, practical way that the students, once set going, would go on enlarging their vocabularies with pleasure. I mimeographed the first sheets of my exercises and took them to class all confident in my smartness. The first thing on the paper was a quotation from Sir Walter Scott, below which was the direction, "Substitute other nouns for every noun in the above paragraph." Then followed questions which brought out the beauty of the concrete nouns and all the other theory. The students were to work the theory out for themselves and see it in all its glory.

The class did not beam with appreciation of their wonderful teacher. They maintained solemnly that they could not do the exercise. I, with the strength of my zeal crushed to earth and risen in a different form, announced, "That is the assignment for tomorrow, and you can do it."

In the afternoon, Mr. Appleman, the leader of the class, came to my office to say, "I think maybe I could do that lesson if you would underline the nouns for me."

It was a good thing that I tried out my exercise on concrete nouns, because I learned that it would not work. But the trying out in any class is not enough, and those who put their entire trust in it fall short. It may mean something, and it may mean nothing.

What then shall we do, and where shall we put our trust? Since classrooms are by the very nature of their necessities a little too formal to be

natural, it is hard to know children while they are in school. It helps a great deal to get acquainted with them outside. I should rather talk over an exercise before it is written and afterwards with one boy sitting under a yellow pine tree, than try it out in a class of thirty. Of course I would have both, but I prefer one frank boy, —one like Charles, who, after I had asked him many questions about boys' activities, in order to get concrete nouns for grammar illustrative sentences, said to me, "I don't see how you live and not know any more than you do." He was right; there is much I must learn outside the schoolroom before I can live.

I should try things out in class, in many classes, and while I was doing it, I should watch the faces of the boys and girls. Then I should be guided in a large part by their smiles.

NEXT MONTH

ART NUMBER

Edited by ROYAL BAILEY FARNUM

"Coöperation in the Education of Art Teachers for our Public Schools."
Amy Rachel Whittier, Director of Teacher Training, Massachusetts School of Art.

"Aims and Tendencies in Elementary Art Education."
C. Valentine Kirby, Director of Art Education, State of Pennsylvania.

"Teaching Considered as a Fine Art."
Grace Clee Smith, State Normal School, Worcester, Massachusetts.

"The Future and Art Education."
Otto F. Ege, Head of the Teacher Training Department, The Cleveland School of Art, Cleveland, Ohio.

"Organizing and Making a City Course of Study in Art."
Leon L. Winslow, Director of Art Education, Baltimore, Maryland.

"Some Findings in Art Education in the United States of America."
Royal Bailey Farnum, Educational Director, Rhode Island School of Design.

WITH THE EDITOR

GUY M. WILSON
SCHOOL OF EDUCATION, BOSTON UNIVERSITY

HELPFUL VIEWPOINTS IN ARITHMETIC

Although much progress has been made in recent years in the adaptation of arithmetic to its legitimate purposes in the schools, the forces of tradition and reaction are very strong and much remains to be done. During the period of further conflict, it will be helpful to any teacher or supervisor to have well-defined viewpoints which will serve as basic guides when re-orientation is needed. The research worker has equal need, especially, as sometimes happens, when a minimum of data are given a maximum of interpretation.

The following viewpoints have direct application to what is happening in the field of arithmetic:

(1) Arithmetic is not one thing but several. It may be classified into kinds of arithmetic as follows:

General arithmetic { computational / informational

Vocational arithmetic { computational / informational

The work of the first six grades should be confined to general arithmetic; computational work means drill on the essentials covering 90% of adult usage; informational work is best when on an appreciative basis and closely connected with the child's experience.

(2) The drill material of arithmetic involves little if any more than addition, subtraction, multiplication, division, very simple fractions, and percentage and interest. The drill procedure should be limited to material so much needed in daily life as to justify mastery. Drill should keep behind meaning. With meaning clear and the load properly limited, 100% mastery is possible. If it is drill material, less than 100% is not satisfactory. Drill materials of arithmetic are tool materials and should be mastered and used automatically,—just as in spelling and writing. The formula for drill is,—a reasonable load, meaning first, 100% mastery.

(3) Just as meaning, understanding, and appreciation of use and prerequisites to drill, so in informational units and verbal problems an experience basis should be provided. Adults do not go about figuring promiscuously, without any basis for understanding. Figuring in real life keeps well behind meaning; it should in the schools. Experience is the only proper basis for verbal problem work; this means that the isolated verbal problem of the textbook should be entirely abandoned; it should be replaced by the large well-motivated informational unit.

(4) Confusions in arithmetic, as in reading, are due to poor teaching, involving usually meaningless materials and various forms of pressure.

Mental hygiene teaches that: (a) The child is entitled to a sizable task. (b) He should understand the task well enough to enable him to set up his own plan of work. (c) He should have freedom and responsibility.

(5) The forces of tradition and reaction supporting the textbook as is (and has been for a century) combine to maintain an impossible load of little-used drill material and a mental disciplinary viewpoint on problem material.

If these forces are overcome it will be through a fortunate combination of forces such as: (a) the principle of social utility operating in the choice of materials, (b) the principle of 100% mastery operating properly on limited drill tasks, (c) the principle of meaning first and experience as basis, operating to change the character of written problem work, (d) the principles of mental hygiene operating in classroom procedures and activities.

GROUP CO-OPERATION.

The present number of EDUCATION is a continuation of group co-operation which began in 1923, following my appointment as chairman of a committee of the National Education Association on the Reorganization of Arithmetic in the Elementary Schools. Immediately I offered a course in arithmetic reconstruction and invited capable students to work with me on the problem. That course has continued ever since, and some of the interest has spread into other courses, particularly the classes in educational measurement and elementary curriculum.

In work of this kind, one early realizes two things. First, that working alone, experimental results are arrived at very slowly. Second, that keen and capable students, teachers, supervisors and superintendents are not only willing, but anxious to co-operate in an experimental program that gives promise of profitable conclusions.

It is without any hesitancy whatever, therefore, that I pass on to my many capable students and co-operators the major credit for what we have been able to do in pursuing further fundamental studies on the uses of arithmetic in business and life, the possibility of simplifying the drill program in line with social usage, and more recently, particularly, the possibility of securing a one hundred per cent mastery in the essentials of the fundamental processes.

It should be noted in passing that the later phases of this experiment have been accompanied by enthusiasm and relief, both on the part of the teachers and of the children. The situation is well expressed in the remarks of Miss Mabel C. Bragg, formerly Elementary Supervisor of the Newton Schools, during one of my visits of inspection:

"There is a feeling of power, Mr. Wilson. They know they can do it."

"Teachers as well as pupils feel the relief. A burden has been lifted."

Miss Bragg's remarks were made in connection with the co-operative program based upon simplified procedure and the goal of one hundred per cent mastery of the fundamentals. Some of the articles in this number relate to this same issue.

SUCCESS IN SIGHT.

Five years of co-operative experimentation, and we are approaching satisfaction on drill services in the fundamentals that lighten the load, proceed by small steps suited to child ability, plan for constant inventorying and checking out of errors, and secure without pressure 100% results for 98% of the children.

There are now on hand a few hundred of the experimental addition drill services, which we have taken over from the publisher in order to make room for the new services with a larger school publishing firm. These experimental services will be passed along at less than cost to those interested in an experiment on, *how quickly the poorest class in addition in the school system can be placed on a* 100% *mastery basis.* Address the author, Guy M. Wilson, 29 Exeter St., Boston.

Help will be given in setting up the experiment.

UNSETTLING THE CHILD.

A bright child enters school with high hopes. If at the close of a year or two he is confused and discouraged, and does not like school, who is to blame? Not the child, surely.

Here are actual explanations developed on a basis of reported cases, in a class in Arithmetic Reconstruction:

Formal approach to numbers.
Drill too soon.
No basic understanding.
Lack of proper motivation.
Punishment.
Threats of failure.
Pressure at home.
Mixed drill procedure.
Facts beyond needs.
Meaningless written problems.

In short, lack of judgment on curricular materials, failure properly to defer drill, procedure with an impossible load of traditional textbook material, these and other causes, discourage and unsettle the child. He has no chance. He has become a "case."

YOUR SCHOOLS AND MINE

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[In this department Dr. Woods will answer to the best of his ability any or all questions on educational topics that are addressed either to him at the address above, or to EDUCATION. *It is to be understood that the writer alone is responsible for the answers given.—H. B.]*

Q. I have seen frequently in a book or an article the term "average child." Just what was meant?

A. Your question reminds me of a yarn about a traveling man who had struck up a friendly chatter with a negro porter. When about to leave the train, as the porter was brushing, he asked: "Say, Black Boy, what is the average tip on this road?" and received the reply, "One dollar, sah, one dollar." So the traveling man gave him a dollar. As the darkey's eyes grew larger and he brushed a bit more vigorously, he exclaimed, "Mah, mah, boss! I's been on dis road for twenty years and youse de fust man what came up to the average." The average child does not exist, but he belongs to the group who can be expected to do with a reasonable degree of success the work laid out for the grade. The testing group defines him as one having an I. Q. of from 90-95 to 105-110. In some schools using the multiple track plan of pupil grouping, he is considered the pupil who falls in the middle one-third of the unselected group. Some schools enlarge this middle group to include about 40-60 per cent of the total. In other words, the average child does not exist in the sense that he can be specifically defined.

Q. What is usually included in the meaning of the term "environment"?

A. The term really means everything that enters into the life of the child after the sperm and ovum meet. In short, it can be said to include the child's surroundings, nourishment, disease germs, accidents, church, gangs, homes, schools, etc. Some of these may have affected his career prior to his birth. Most of them enter his life after birth and usually after he has begun to move around with a fair degree of freedom.

Q. I am teaching in a small school and have been reading of the advantages of classifying pupils into ability groups, but see no possibility in a small school without an undue expenditure. I have 35 pupils in my grade, 15 seem to be much better in their work than the other 25. What can I do?

A. I should suggest, since you are right in your conclusion about ability grouping in the big sense of different classes for different levels of ability is out of the question, that you section your class and divide the time. Make one section consist of the 15 better pupils, placing the remainder in the other or slower section. Then adapt your teaching and curriculum to their abilities. I should expect that the "standards" for promotion may also have to be adapted in this case.

Q. From West Virginia comes the inquiry as to whether there is not a law requiring schools to close for at-

tendance at the state educational meetings?

A. I know of no such requirement, but am surprised to find a school which would deny its staff the chance to go if they were professionally minded. Instead, they should congratulate themselves. However, there seems to be a few such administrators still left. This might be an admission on the part of the administrator that his state meeting is of such low quality as not to warrant the loss of the school time. I feel that it is commendable in any staff of teachers to want to go to state or national meetings that are of a professional nature. Some places pay teachers' expenses to some of these meetings.

Q. What advantages can be claimed for the classification of pupils according to abilities?

A. It makes possible, but does not assure, the adaptation of teaching, curriculum, and school plant to fit into the individual needs of the school child. By placing in groups pupils of approximate abilities one is enabled to have the work arranged in such a manner that all will have a much better opportunity of "leading" at times. One seems to enjoy playing or working in a group of equals. Interest is soon lost in a game where one is outclassed markedly by the other players.

Q. In teaching reading, which should be stressed, the speed of reading, or its comprehension?

A. By all means comprehension. What good is it to say words. Fortunately, the rapid readers are usually the comprehensive readers, so speed becomes an important factor. Stress comprehension with understanding that a check of some kind is to be made. After that, crowd them for speed. Never reverse the order.

Q. I find that my students resent being kept after school to get help which I feel they need. What can I do to help the situation?

A. First of all, quit "keeping them in." You probably also "keep them in" as punishment when they make infractions of the school law. How can the same thing be both a reward and a penalty? Children also resent what they sometimes think is an infringement upon their rights to get freedom and play privileges at the close of school. I suspect that you are right in concluding that they need help and you probably cannot find enough time during school hours for it. Much better would it be for you to have a personal talk with the pupil, in which you attempt to show him his need and suggest that you will be willing to remain after school some evening to help him in any way that you can. Make it a privilege, not a penalty.

Q. What are the causes of individual differences?

A. Among the most prominent causes might be listed: race, sex, heredity and environment. The latter two probably affect the teacher more directly than the others. In fairness it might be said, however, that the differences are quantitative rather than qualitative. That is to say, we differ in amounts, not in traits. We all have some of all traits.

DEPARTMENT OF BOOK REVIEWS

Towards Better Educations. By *David Snedden*, Professor of Education, Teachers College, Columbia University, Bureau of Publications, Teachers College, Columbia University, New York City, 1931.

There can be no question but what America has greatly surpassed other nations in her financial support of education—both public and private. America has had unbounded faith in the curative and elevating powers of education. The belief has been strong that if somehow persons were exposed to education they would improve along all lines. The greater portion of American parents have instilled into their children belief in the eleventh commandment, namely: "Thou shalt not remain on the lowly level of thy father, economically, culturally, civicly, or even religiously." The means of securing this change of status has been thought to be largely through education. Education, too, has frequently been looked upon as the way of achieving the commonly accepted idea or definition of democracy—which is "I am as good as you are. What are you going to do about it?" Hence, America has been continuously in favor of "more educations."

In recent years, however, American educators have not only been seeking "more educations" but "better educations." To develop these "better educations" they have been trying to use scientific methods —in short, to develop "a science of education."

In his book, "Towards Better Educations," Snedden turns his attention to a series of analysis of present-day theories, trends, and practices in education. He chooses for his analytical treatment sixteen groups of educational problems in each of which it is contended that contemporary educational thinkers are confused because of their inability to distinguish clearly between educational purposes and educational methods. Educational methods have been taken too frequently to constitute the sum total of the educational process. Indeed, most of the so-called newer educations have been those dealing with methods instead of objectives. Methods should be the handmaid of objectives rather than the determiner of objectives.

Throughout his study Snedden has made frequent use of the writings of such well-known educational thinkers, leaders, philosophers, psychologists, and sociologists as John Dewey, Everett Dean Martin, W. H. Kilpatrick, F. G. Bonser, F. H. Giddings, B. H. Bode, H. S. Jennings, Bertrand Russell, Harold Rugg, H. G. Wells, E. R. Groves, Chapman, Counts, and others. Often the quotations selected are so limited that they do not adequately set forth the author's theories —indeed, they may give somewhat warped views. On the other hand, excerpts are often used to confirm an interpretation made by Snedden. Dewey is quoted more frequently than any other authority. Snedden does this because he seems to feel that the enthusiastic disciples of Dewey have read into Dewey's philosophy of education a confusion of purposes and of methods that Dewey never intended. Thus, Snedden attempts to clarify Dewey rather than to question his fundamental tenets.

Particularly interesting and challenging are his chapters dealing with (1) Schools as Preparation for Life—and as Life Itself; (2) Creativeness in Learnings; (3) Educations to Socialize and Educations to Individualize; (4) Purposes Versus Methods in Education for the Gifted; (5) Purposes Versus Methods in Education for the Handicapped; and (6) Our Changing Civilization: Possible Effects on Education.

The book is typically Snedden. The modified form of outline predominates and thus much ground is covered in rather a sketchy manner. Many issues and questions are raised and are left

without elaboration, explanation, or solution. Indeed, most of them at the present stage of our educational thinking cannot be brought to satisfactory conclusions. The book is probably intended for advanced students in educational sociology; and as many of the problems in that subject are still somewhat nebulous it is too much to expect that a book in this field will be especially definite. Yet, the book is worthy of study, for it will cause educators to think more clearly about the whole process of education than they have in the past.—FRANKLIN C. ROBERTS, School of Education, Boston University.

Complete George Washington Anniversary Programs for Every School Grade. Compiled and Edited by *Alma Laird*. Noble and Noble, publishers, New York City, pp. 167.

From the opening, "The Red, White and Blue," for the first grade, where "three very little girls or boys" each recite in turn a line:

"I love the name of Washington,
I love my country too,
I love the flag, the dear old flag,"

and all together join in with

"Of Red—White—and Blue,"

to the closing eight-page, one-act play, where eighth-grade pupils discuss the financial conditions of the young republic, the seventy-two exercises are varied, suggestive and interesting. The volume merits a place in the library of every elementary school.

Vergiliana. By *George Meason Whicher*. The Bookmart, Amherst, Mass., 1931. 152 pp. $1.35.

Letter-writing as an art has been a characteristic distinctively of certain epochs in the literary history of our civilization. Some of its most delightful exemplars belong to Latin literature. Very fittingly then Professor Whicher has chosen to express his sensitive appreciation of Rome's greatest poet in the form of a series of letters. His imagination swings the reader back to the time of the Younger Pliny, a name distinguished in literary correspondence. But that friend of Tacitus is the recipient, not the writer, of these poetic epistles. From a family name that belongs to Pliny's intimate circle, the modern author creates two personalities, M. Mutius and a cultured freedman of that house, M. Mutius Palio. Thus the twelve letters of the book are varied in point of view according to the habit of thought of the two imaginary writers. There is hereby contrived an opportunity to examine many facets of Vergil's achievement, for, as would be natural in a group of connoisseurs in the arts, the discussion in each letter turns to that commanding figure of the Augustan Age, then more than a century removed from those who are admiring and appraising. The impression is of detached observation from keenly critical, sophisticated minds of Vergil's own race. It might be said that, to sharpen modern vision, the author has given his reader the focusing lens of a Roman period enough separated from the Augustan to afford excellent perspective.

The book will appeal to the general reader of cultivated taste as well as to the scholar. Indeed, there could not be a more helpful adjunct to a college course designed to give in English the flavor of Roman literature and civilization. And certainly the teacher of Greek and Latin classics will welcome it as a charming "companion to classical studies." It is sufficiently equipped with notes at the end of the volume to make it very serviceable pedagogically.

But it would be wrong to think of *Vergiliana* as a text-book. It is a beautifully sustained poem, cut into chapters, not only by its epistolary device, but also by insets which vary the letter style pleasantly and provide occasion for the use of other metres than that which predominates, blank verse. One of these insets is a "Vintage Hymn," as true in rustic imagery and gaiety to modern as to ancient Italy; a second is an exquisite pastoral, in the manner of Vergil's own *Eclogues;* a third translates verses on the *Aeneid* traditionally ascribed to Augustus; the fourth renders some 'Garden Poems" belonging to a group of minor works about which scholars have debated regarding their probable authenticity as Vergilian.

Not often is a scholar a poet. Professor Whicher is both. He has published six earlier books of poems, two of which were in collaboration with his son. His career as an educator has been long and distinguished, including academic service not only in this country, but also in Rome. Among his degrees is a doctorate from the University of Padua, and he is an officer of a Greek order on honor.

The book is dedicated to P(ublius) V(ergilius) M(aro). Woven into its fabrice are variously toned Vergilian threads; bits of translation, paraphrases, memories of the Mantuan's imperishable poetry. To an age that does not always follow the ideal, it offers, without didactirism, peculiarly welcome refreshment. It makes for others what his great poet is for him:

"A healing refuge in a scorching hour,
A gracious influence that brings relief."

There have been lately many Bimillenial tributes to Vergil. Among such, this is one of enduring significance.—Florence Bennett Anderson.

The Twenty-ninth Yearbook in Review.

[Educators have accustomed themselves to place considerable confidence in the yearbooks of the National Society for the Study of Education. When a yearbook falls so far below the standard as to elicit universal protests, it is not inappropriate that some of the reviews voicing that protest should be published.—G. M. W.]

Three reviews of the Twenty-ninth Yearbook of the Society for the Study of Education have come to the writer's attention. This is the Yearbook dealing with arithmetic reported on at the Atlantic City meeting of the National Education Association in 1930.

Doctor W. J. Osburn, Ohio State University, presents the first review of the Twenty-ninth Yearbook in the Educational Research Bulletin of the Ohio State University April 16, 1930. Dr. Osburn analyzes the main topic of the yearbook and indicates the pages devoted to each. Following this, he sets forth the main defects of the yearbook, as follows: (1) Failure to give complete references, (2) lack of systematic treatment, (3) vague treatment, (4) inaccurate statistical treatment, (5) failure to discuss reliability, (6) failure to discuss validity.

We have revealed in this review, as also in the one by Dr. Meriam referred to below, that valuable objective contributions offered to the committee were rejected by it.

The fact that textbooks are a determining viewpoint in the yearbook is recognized by Dr. Osburn. It appears also that the significant studies on long division by Dr. Osburn were entirely neglected by the yearbook committee. The total impression from reading Dr. Osburn's review is that the committee goes at its task with considerable bias, which it supports mainly by argument, that the yearbook as a whole contains a minimum of what might be characterized as scientific research.

Another review, by Dr. A. O. Bowden, appeared in "School and Society" April 26, 1930, pages 567-69. Dr. Bowden's main interest is the curriculum. He notes that fewer than 20 of the 750 pages are devoted to what should be taught in arithmetic, and that what is given is mere opinion rather than significant data.

Dr. Bowden notes that formal discipline, or transfer of training, is the chief reliance of those producing the yearbook, and that the general attitude of the committee is one of defence. He regrets that the committee does not recognize the need for progress in the teaching of arithmetic, similar to what has taken place in all other lines, such as accounting, bookkeeping, industry, transportation, etc.

A third review, by J. L. Meriam, of the University of California, appears in "School and Society" May 23, 1931, pages 697-701. Dr. Meriam's review is more exhaustive and leaves no doubt in the mind of a reader that he definitely blames the National Society for permitting the chairman of the Yearbook Committee to "exclude contributions not directly in harmony with his own views, and then proceed to shape the yearbook in such a manner as to advertise his own textbooks." He indicates

that the volume is "a questionable contribution to the reputation of this Society."

Dr. Meriam's second fundamental criticism is that the yearbook is devoid of objective data, abounds in unsupported opinion and argument, and is more properly propaganda than research. The two quoted paragraphs which follow show Dr. Meriam's general evaluation of the book.

"Such straw-men! There is no educational revolution save in Russia. We have no educational theories or practices 'in terms of children's present interests and desires alone.' No one claims that the skills of the conventional school can not be made tolerable to children.

"But this committee, obviously strongly imbued with the notion of the importance of the conventional arithmetic, assigns itself to the task of knocking over every straw-man that can be set up, and filing pages and pages of analytical details of arithmetic as though this pretended scientific treatment added dignity to this elementary-school subject and justified its place in the curriculum. The view-point throughout the volume is a call-to-arms in support of the systematic arithmetic of our fathers: 'Drill, ye terriers, drill.' The underlying philosophy is that arithmetic is of value as general training, not that arithmetical knowledge or skill is of value only as it functions in real life activities. There is, it may be readily recognized, much in current theory and practice strictly in harmony with this view. But it is clear that these authors are not concerned with presenting a true portrayal of tendencies. The intent seems to be to resist those tendencies. The almost total disregard of objective evidence permits a most astonishing exhibition of subjective bias in favor of the old arithmetic."

The present writer has no defence for the yearbook, but desires to call attention to two outstanding studies in the volume both of which may be characterized as fundamental and worthwhile research. The first, by Buckingham and MacLatchy, reports on the number abilities of children when they enter Grade One. Enough children are involved to make this study significant, the findings are sufficiently reported to permit the reader to draw independent conclusions.

The other significant study in the yearbook is the one by Washburn on "Grade Placement of Arithmetic Topics." This represents co-operative experiment and the data are presented sufficiently to permit the reader to disagree with the conclusion of the author. In other words, the reader may place a topic for maximum results in a grade later than Washburn recommends.

It may be noted that the six five-minute speakers at Atlantic City were severe in their criticism of the unprogressive character of the yearbook, as was also Dr. Ernest Horn, who had a place on the main program, although not a member of the yearbook committee. Dr. Horn noted that the principle of social usefulness which the committee had so strongly condemned had proven one of the most fruitful principles of curriculum construction and revision.

NEW EDUCATIONAL BOOKS

We acknowledge receipt of the following publications of interest to the readers of EDUCATION. Mention here does not preclude review in this or subsequent numbers of EDUCATION.

Supervised Study. By *Louis R. Kilzer*, Ph.D., Professor of Education and Principal, Secondary Training School, University of Wyoming. 1931. The Professional and Technical Press, 332 pp.

Complete George Washington Anniversary Programs. New Ways to Honor the Father of Our Country. Compiled and Edited by *Alma Laird*. Noble and Noble, publishers, 1931. 167 pp. Price $1.50.

Educational Yearbook of the International Institute of Teachers College, Columbia University. The Expansion of Secondary Education. Edited by *I. L. Kandel*, M.A., Ph.D., Professor of Education and Associate, International Institute, Teachers College, Columbia University. Published 1931 by Bureau of Publications, Teachers College, Columbia University. 544 pp.

Objective Tests to Accompany A Student's Work-Book in American Democracy. By *Verl A. Teeter*, M.A., Director of the Guidance and Placement Bureau, Tulsa City Schools, Tulsa, Oklahoma. McGraw-Hill Book Company, Inc., 1931. 35 cents.

The Development of Mental Health in a Group of Young Children. University of Iowa Studies Series. By *Elizabeth Skelding Moore*. Published by the University of Iowa. 1931. 128 pp., paper $1.15, cloth $1.50.

Farm Life Problems and Opportunities —(Reading With a Purpose). By *Clarence Poe*. 1931. American Library Association. 36 pp., paper.

What European and American Students Think on International Problems. A Comparative Study of the World-Mindedness of University Students. By *Heber Reece Harper*, Ph.D. Bureau of Publications, Teachers College, Columbia University. 1931. 256 pp.

The School Status of the Hard of Hearing Child. An analysis of the intelligence, the achievement, and certain personality traits of the hard of hearing child. By *Richard Madden*, Ph.D. Bureau of Publications, Teachers College, Columbia University. 1931. 64 pp., cloth $1.50.

Free Associations to Common Words. A Study of Word Associations to twenty-five words picked at random from the five hundred most commonly used words in the English language. By *Leonard B. Wheat*, Ph.D. Bureau of Publications, Teachers College, Columbia University. 1931. 46 pp. $1.50.

A Critical Evaluation of a Supervisory Program in Kindergarten - Primary Grades. By *Julia Letheld Hahn*, Ph.D. Bureau of Publications, Teachers College, Columbia University, 1931. 148 pp., $1.50.

Check List Materials for Public School Building Specifications — Covering the general specifications. By *Lee Byrne*, Ph.D. Bureau of Publications, Teachers College, Columbia University. 931. 195 pp., $2.25.

Unit Costs of Salaries on Teachers Colleges and Normal Schools. By *Herman J. Magee*, Ph.D. Bureau of Publications, Teachers College, Columbia University. 1931. 75 pp., $1.50.

A Personnel Study of Negro College Students. A study of the relations between certain background factors of negro college students and their subsequent careers in college. By *Ambrose Caliver*, Ph.D. Bureau of Publications, Teachers College, Columbia University. 931. 146 pp., $1.50.

The Psychogalvanic Reactions of Exceptional and Normal School Children. By *Robin Dickinson Collmann*, M.Ed., Ph. D. Bureau of Publications, Teachers College, Columbia University. 1931. 88 pp., $1.50.

Paraguay—Its Cultural Heritage, Social Conditions and Educational Problems. By *Arthur Elwood Elliott*, Ph.D. Bureau of Publications, Teachers College, Columbia University. 1931. 210 pp., $2.50.

Rome and the Romans. A Survey and Interpretation. By *Grant Showerman*, Ph.D., Professor of Classics in the University of Wisconsin, Director of the Summer Session, The American Academy in Rome. The Macmillan Co. 1931. 643 pp., $2.40.

The Measurement of General Spelling Ability Involving Controlled Comparisons Between Techniques. By *Walter Wellman Cook*, Ph.D. Univ. of Iowa Studies Series. Published by the University, Iowa City, Iowa. 1931. 112 pp., $1.00.

Modern Psychologies and Education. By *Clarence E. Ragsdale*, Ph.D., Assistant Professor of Education, The University of Wisconsin, with an Introduction by *M. V. O'Shea*, Professor of Education, The University of Wisconsin. 1932. The Macmillan Company. 407 pp., $2.25.

A First Reader in Spanish. By *Nina Lee Weisinger*, Adjunct Professor of Romance Languages, Universityof Texas, and *Marjorie C. Johnston*, Austin High School, Austin, Texas. Illustrated by Alberto Cugat. 1931. Doubleday, Doran & Company, Inc. 143 pp., 80 cents.

The Nature and Treatment of Stammering. By *J. E. Boome*, M.B., Ch.B., D.P.H., T.D., Divisional Medical Officer, London County Council, and *M. A. Richardson*, Senior Assistant, L. C. C. Remedial Courses for Stammering Children. 1932. 133 pp. E. P. Dutton & Company, Inc. $1.50.

The Economic Basis for the Teacher's Wage. By *Lester Dix*, Ph.D. 1931. Bureau of Publications, Teachers College, Columbia University. 114 pp., $1.75.

Los Mejores Cuentos de Emilia Pardo Bazan. Edited by *Willis Knapp Jones*. Professor of Spanish, Miami University, Oxford, Ohio. 1931. Doubleday, Doran & Company, Inc. 208 pp., $1.25.

The Relative Merits of Cursive and Manuscript Writing. By *Thelma G. Voorhis*, Ph.D., Lincoln School of Teachers College, Columbia University. Bureau of Publications, Teachers College, Columbia University. 1931. 58 pp., $1.50.

Conference on Examinations. Under the Auspices of The Carnegie Corporation, the Carnegie Foundation, and the International Institute of Teachers College, Columbia University. Conference organized and proceedings edited by *Paul Monroe*, Director of the International Institute. 1931. Bureau of Publications, Teachers College, Columbia University, New York, N. Y.

Drill in English. By *George B. Woods*, Dean and Professor of English, American University, and *Clarence Stratton*, Director of English in High Schools, Cleveland, Ohio. Doubleday, Doran & Company, Inc. Also Tests for the above.

Illustrated Study Guide for the Grades and Junior High School on Ancient and Medieval History (The European Background). By *Charles A. Coulomb*, Ph.D., District Superintendent of Schools, Philadelphia. McKinley Pub. Co. 44 cents.

Hart's Modern Junior Mathematics. By *Walter W. Hart*, Associate Professor of Mathematics, School of Education, and Teacher of Mathematics, Wisconsin High School, University of Wisconsin. Book One, Grade Seven, 255 pp., 84c. Book Two, Grade Eight, 271 pp., 88c. Book Three, Grade Nine, 351 pp., $1.28. Teacher's Manual for all three books. 1932. D. C. Heath & Co.